



NATURALIST:

A
MONTHLY JOURNAL OF

Natural History for the North of England

EDITED BY

W. H. PEARSALL, D.Sc., F.L.S., and W. R. GRIST, B.Sc.,
THE UNIVERSITY, LEEDS

with the assistance as referees in special departments of

B. BOOTH, F.Z.S., M.B.O.U.

M. BROWN, B.Sc., F.R.E.S.

H. BURRELL, F.L.S.

HRIS. A. CHEETHAM, F.R.E.S.

J. J. FORDHAM, M.R.C.S., L.R.C.P.,

D.P.H.

RILEY FORTUNE, F.Z.S., F.R.P.S.

Professor A. GILLIGAN, D.Sc., F.G.S., M.I.M.E.

Mrs. ELSIE M. MOREHOUSE.

THOS. SHEPPARD, M.Sc., F.G.S., F.Z.S.

T. W. WOODHEAD, Ph.D., M.Sc., F.L.S.

1938.

LONDON

A. BROWN & SONS, LTD., 5 FARRINGDON AVENUE, E.C.4
AND AT HULL.

PRINTED BY A. BROWN AND SONS, LTD.,
PERTH STREET WEST, HULL.

The NATURALIST

A MONTHLY
ILLUSTRATED JOURNAL

PRINCIPALLY FOR THE NORTH OF ENGLAND

Edited by

H. PEARSALL, D.Sc., F.L.S., and W. R. GRIST, B.Sc.,
The University, Leeds.

with the assistance as referees in special departments of

H. B. Booth, F.Z.S., M.B.O.U.

J. M. Brown, B.Sc., F.R.E.S.

W. H. Burrell, F.L.S.

Chris. A. Cheetham, F.R.E.S.

W. J. Fordham, M.R.C.S., L.R.C.P.,
D.P.H.

Riley Fortune, F.Z.S., F.R.P.S.

Professor A. Gilligan, D.Sc., F.G.S., M.I.M.E.

Mrs. Elsie M. Morehouse.

Thos. Sheppard, M.Sc., F.G.S., F.Z.S.

T. W. Woodhead, Ph.D., M.Sc., F.L.S.

Contents

PAGE

Anglo-Saxon Cemeteries in East Yorkshire

(illustrated)—T. Sheppard

1-23

Record

23

The Yorkshire Naturalists' Union's Seventy-sixth
Annual Report for 1937

24-49

The Vegetation of Yorkshire and Supplement to
the Floras of the County—(The Late) Dr.

F. A. Lees—Edited by C. A. Cheetham

50-52

Illustrations

3, 7, 9, 11, 13, 15, 17

Plate I

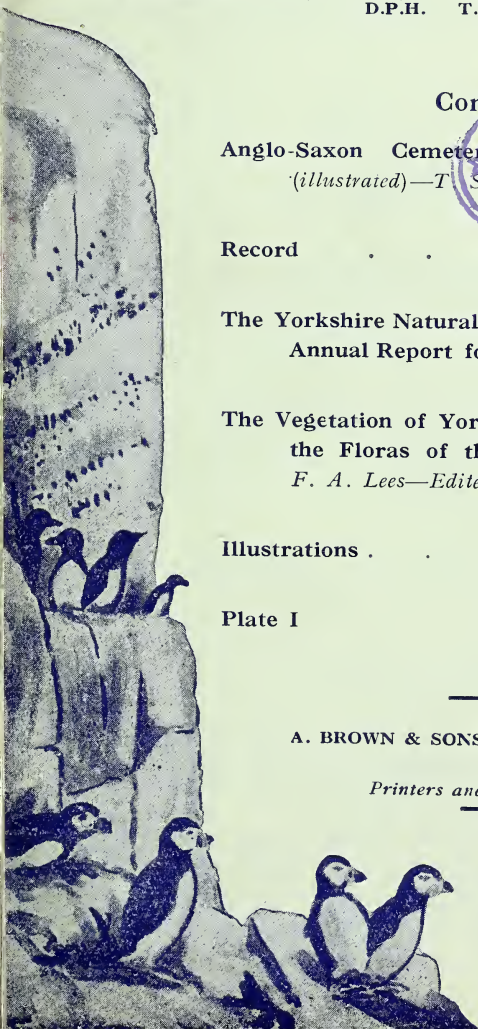
LONDON:

A. BROWN & SONS, Ltd., 5 Farringdon Avenue, E.C.4.
And at Hull.

Printers and Publishers to the Y.N.U.

PRICE 1/6 net.

Prepaid Subscription
15/- per annum.



A new work of prime importance to all interested in
Ornithology

A SPARROW-HAWK'S EYRIE

BY

W. W. NICHOLAS, F.R.P.S.

WITH FOREWORD BY

BRIAN VESEY-FITZGERALD, F.L.S., F.G.S.

NATURALIST EDITOR OF *THE FIELD*

xviii + 75 pages and 17 plates. Crown 4to.

cloth **7'6** net

This book, which is profusely illustrated from photographs taken by the author and his friend, forms the study of a Sparrow-hawk's eyrie from the hatching of the eggs to the flying of the young. In his foreword Mr. Vesey-Fitzgerald says:—"Mr. Nicholas has made a most careful study of the bird and he has in this book added very considerably to the sum total of our knowledge. And more knowledge of such birds as this very beautiful hawk is urgently needed."

OBTAINABLE FROM ALL BOOKSELLERS

*A four-page illustrated pamphlet will be gladly sent by the publishers,
free of charge.*

A. BROWN & SONS, LIMITED

5 FARRINGTON AVENUE, LONDON, E.C.4.

AND AT HULL

LABORATORY Assistant, 8 years' experience in Zoological Laboratory. Desires similar position. London preferred. Box C. 812, THE NATURALIST, 5 Farringdon Avenue, London, E.C.4.



Dr. H. HAMSHAW THOMAS, F.R.S.
President of the Yorkshire Naturalists' Union, 1938

THE NATURALIST

FOR 1938

ANGLO-SAXON CEMETERIES IN EAST YORKSHIRE

T. SHEPPARD

BETWEEN the disappearance of the Romans from these islands in the fourth century, and the advent of the Normans in the eleventh century, there is a definite lack of historical information as to what transpired, and this gap has had largely to be filled by deductions made from relics which have been obtained by excavations.

Accidental discoveries indicate that different parts of England were occupied by peoples from the Continent, and an examination of West European antiquities, and a comparison between them and those found in England, have given an idea of the areas in this country which were occupied by the different tribes. Among them are the Jutes, Angles, Saxons, Frisians and Danes. These last include people from Norway, Sweden and Denmark, and of course the Vikings, the people who founded the town of Wyke, later to become Kingston upon Hull.

As is shown by place-names, and dialect, the Danes were once prominent in East Yorkshire, and evidently their raids and depredations have left a traditional interest ; so much so, that anything of an extraordinary character is attributed to the ' Danes,' just as in the West Riding and other parts we find Devil's Arrows, Devil's Punch Bowl, Devil's Dyke, and so on. The Danes' Graves near Driffield have been so named by people who did not know their true origin. As recent excavations have shown, those here buried are of the Iron Age, who lived several hundred years before the Danes arrived. Similarly, the magnificent earthwork known as Danes' Dyke, extending for four miles across Flamborough Headland, has proved to be of prehistoric date, and certainly several centuries earlier than the Danish invasion.

East Yorkshire was naturally a particularly attractive place for those early settlers, usually known as the " Anglo-Saxons " ; and Angle-land, Saxony, and Schleswig Holstein may be looked upon as the original home of these invaders.

East Yorkshire, with its sea-coast easily accessible from the Continent, and, in those days, a well-wooded country, with meres and marshes containing quantities of fish, with the low lands well wooded, with numerous glacial mounds which formed high and dry sites for habitations, and the Wold area from which a good view of the surrounding country could be obtained, was a particularly attractive centre.

Unlike parts of the South of England, East Yorkshire

revealed no surface evidences of the occupation of these early people, and the sites of their homes and of their cemeteries have been discovered entirely by accidental excavations.

In their later years, during the eighth century, after Christianity had been adopted, we find certain stone crosses and other monuments erected by the Saxons, still on the sites of later churches or other religious houses.

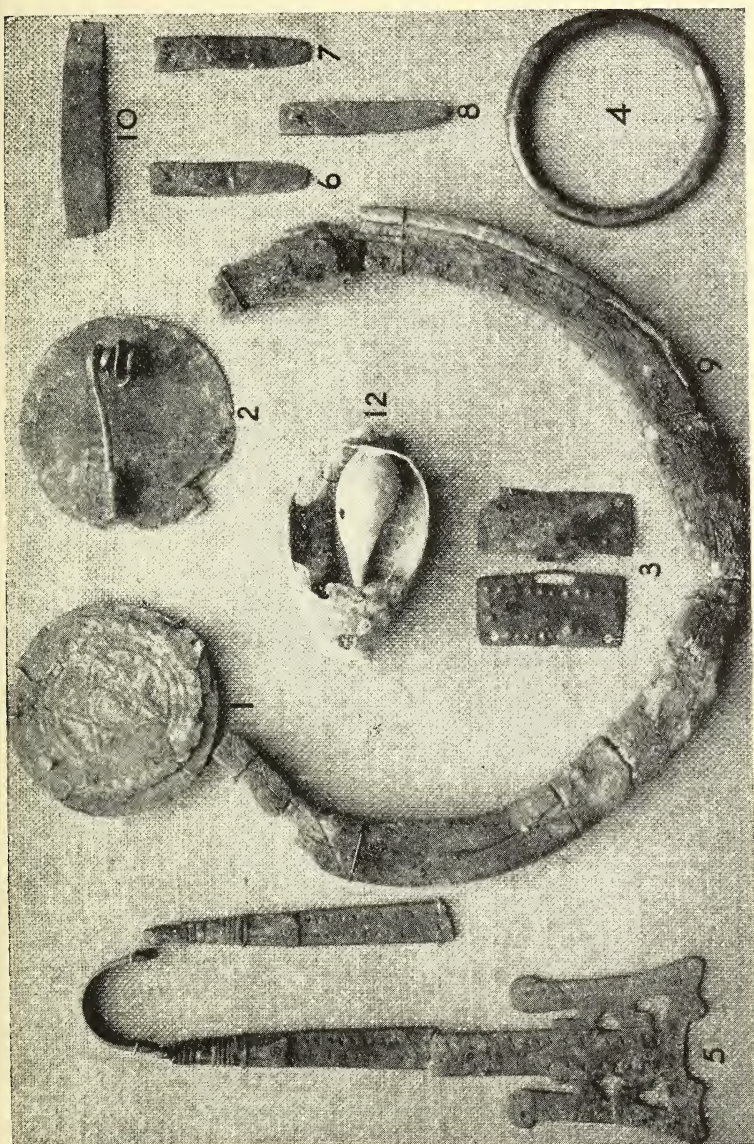
The cemeteries of those occupying the district, in the fifth, sixth, and seventh centuries, however, still exist; and from these it is clear that in the earlier periods, when the Saxons were heathens, their usual mode of burial was by cremation, the ashes being placed in hand-made urns, highly decorated by impressing the clay from within, thus forming bosses and diagonal lines; or by impressing various designs on the outside of the urn by stamps of different patterns. The vessels were usually decorated by parallel lines round the neck, evidently formed by a bone tool. In most cases the urns have rounded bases, a definite flat foot being of rare occurrence, though occasional examples are known.

During this early cremation period there is not very much evidence of the weapons, implements and ornaments which were in use, though occasionally among the ashes are found remains of knives, combs, beads, spindle whorls, etc., and on one occasion a child's urn contained a small ring with a toy knife, shears, and tweezers, in bronze. These objects usually are similar in type to those found in the later ordinary interments.

After Christianity was adopted, the Anglo-Saxons buried their dead in definite rows, sometimes in coffins, in an ordinary churchyard; and the bodies were usually placed with the head to the west, and the feet to the east; and laid at full length. During the earlier heathen period, however, swords, knives, shields, and other objects were placed with the men; while the women were buried with their beads, bracelets, brooches, chatelaines, and sometimes gold rings or other ornaments, indicating that after their long sleep the men and women hoped to live again under somewhat similar conditions to those which occurred when they were on this earth.

During his excavations on the Yorkshire Wolds, the late J. R. Mortimer found quite a number of Anglo-Saxon cemeteries, it occasionally being found that a prehistoric trench alongside an earthwork, which was easily excavated, had been used as a cemetery. Sancton, in East Yorkshire, has produced one of the finest collections of urn burials in the country, and more recently, at Londesborough, at Hornsea, and on other sites, important discoveries have been made, which, with the Mortimer Collection, are now available to students, in the Museum at Hull.

During the past few months the removal of material in



different quarries has revealed Anglo-Saxon cemeteries in the East Riding on the edge of the Wolds, in a commanding position overlooking the flat valley below, which was an ideal situation for a settlement. It is in the area where both the late Canon Greenwell and the late J. R. Mortimer were successful in finding a large number of Bronze Age and other burials, and well within the district covered by Mortimer's *Forty Years Researches in British and Saxon Burial Mounds in East Yorkshire*.

These cemeteries have many remarkable features. For example, among the hundreds of Saxon graves opened in the district both by Greenwell and Mortimer, not a single pair of chatelaines was found. And of all the excavations made in East Yorkshire since their death, only one pair has been found at Londesborough, and can be seen in the Mortimer Museum. (See *Hull Museum Publication*, No. 33, p. 16.)

Similarly, the disc-shaped decorated brooches just found are not recorded elsewhere in the East Riding. The many necklaces of amber beads, two containing almost a hundred each, are remarkable as occurring with so few skeletons. Among a collection of Viking relics from Efaefsk, in Russia, which is in the Hull collection, there is a string of beads, some of which are of amber, and, as with some of those recently found, are probably from the Baltic. The size, quality of amber and method of decoration and perforation of the beads from Russia, are identical with those recently found.

The large ivory bracelet, 6 ins. in diameter, recently found, is surely the largest ever found in England.

The conditions under which the first objects were found, made it difficult precisely to assign one to any particular skeleton, although the marks of the bronze on the bones enables them fairly well to be assigned to their proper places. I was enabled early to visit the sites, and further discoveries have been made which indicate that a fairly wealthy community existed at this particular area, and the number of ring, disc and cruciform brooches, as well as chatelaines, bead necklaces, various objects of iron and ivory, etc., suggests that the area was in its prosperity during the fifth and sixth centuries; and with some of the skeletons, fragments of pottery occurred which are of typical Anglo-Saxon patterns, and marked and stamped in the characteristic manner.

References to such positions for Saxon burial places, particularly near the sea, occur, as in the poem of Beowulf:—

‘Command the war-chiefs
To make a mound
Bright after the funeral fire,
Upon the nose of a promontory;
Which shall for a memorial

To my people
 Rise high aloft
 On Hronesness ;
 That the sea-sailors
 May afterwards call it
 Beowulf's barrow
 When the Brentings
 Over the darkness of the floods
 Shall sail afar.'

These fragments, however, besides having typical Saxon decoration, also include pieces of earlier date. These are definitely 'sherds' however, frequently with the edges well worn, and rounded, and in no case is it even possible to reconstruct a portion of any vessel. These were mixed with the earth scattered over the graves. As Baron de Baye (*The Industrial Arts of the Anglo-Saxons*, p. 120) points out :— 'The sherds taken from Anglo-Saxon graves were not fragments of vessels freshly broken by the relatives and friends of the deceased, but had been previously collected, and left lying on the ground, to be thus used when occasion required. Fragments of a recently broken vessel did not, apparently, fulfil the conditions demanded for this funeral usage. It is difficult to say for how long a period these superstitious practices were in vogue, but the edicts which were directed against them show clearly enough that they survived the introduction of Christianity.'

This practice has been compared with the burial of potsherds thrown upon the corpse of a suicide. It is recorded by Shakespeare in *Hamlet*, that :—

' Her death was doubtful ;
 And, but that great command o'ersways the order,
 She should in ground unsanctified have log'd,
 Till the last trump. For charitable prayers,
 Sherds, flints, and pebbles, should be thrown on her.'

Similar fragments were noticed when excavating the Anglo-Saxon cemeteries at Hornsea (*Hull Museum Publication*, No. 97) and Newbald (*Hull Museum Publication*, No. 3, p. 10).

Perhaps the most remarkable find in the recent excavations has been the enormous number of beads made of amber. These beads are usually roughly globular in shape, but have facets suggesting that they have probably purposely been roughly shaped before being perforated. The perforations for the cord are remarkably well made, evidently by a fine drill. Occasionally a large bead has been very well turned, and now and then beads of glass, earthenware, etc., occur. With each necklace are usually two or more long thin beads of dark blue glass.¹

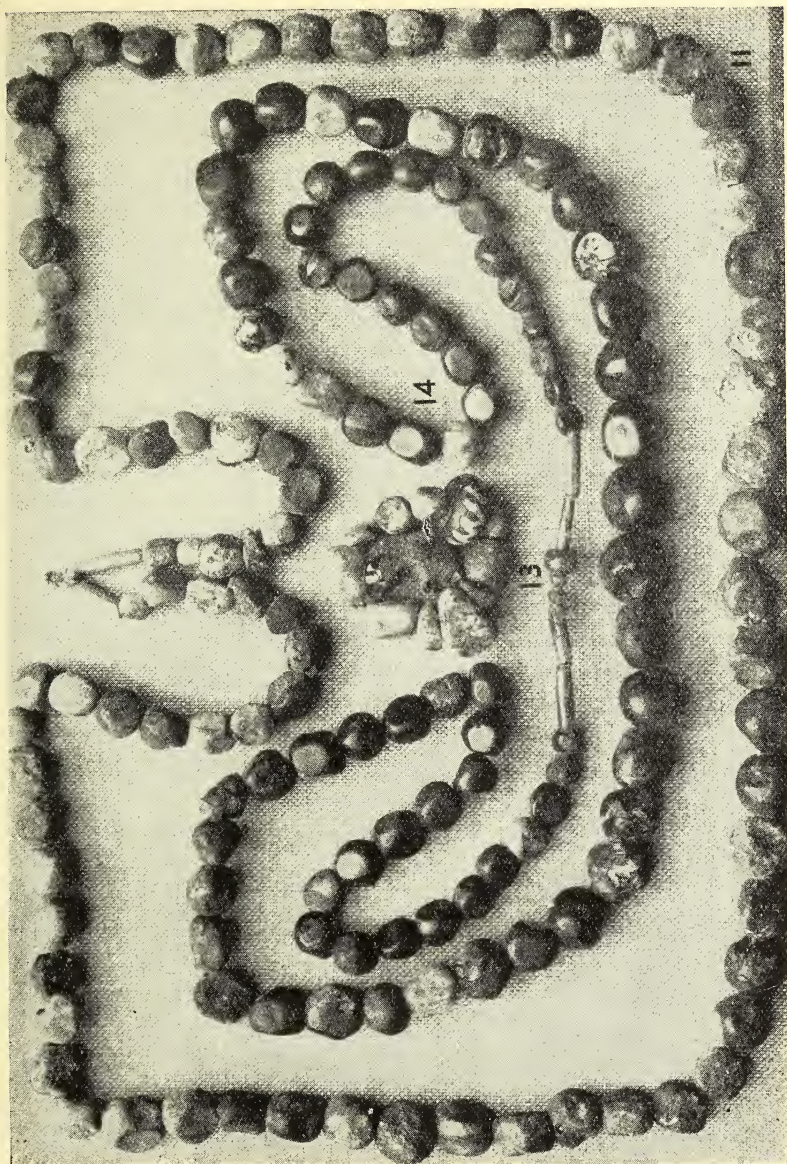
¹ Amber beads in strings about the same quantity, and precisely similar in shape and size, are known from an Anglo-saxon cemetery at Wittenham, Berks.

Amber beads seem particularly numerous in Saxon burials in East Yorkshire. We have them from Londesborough (*Hull Museum Publication*, No. 33, in a necklace of 28 beads, all the larger ones being of amber) ; and, excavated by Mortimer at Driffeld, a necklace of 54 beads, mostly amber (Mortimer's *Forty Years Researches in British and Saxon Burial Mounds in East Yorkshire*, Fig. 783) ; and from the same place a smaller necklace of 14 beads, 8 of which are of amber (*tom. cit.*, Fig. 795), and another of 92 beads ; another of 219 beads in probably three rows on the left breast had 141 of amber, measuring $\frac{1}{8}$ th of an inch in diameter.

Other Saxon necklaces found by Mortimer in the Driffeld district show :—

that of	14 beads	7 are of	amber.
„	84	„	74 „ „
„	13	„	5 „ „
„	75	„	57 „ „
„	53	„	42 „ „
„	97	„	66 „ „
„	19	„	15 „ „
„	13	„	5 „ „
„	26	„	10 „ „
„	18	„	2 „ „

With the first female skeleton (Page 3) discovered on the present site, near the shoulder was a pair of large disc-shaped 'applied brooches' (Figs. 1, 2). These were made by joining two circular pieces of bronze together, the lower part being a thick plain plate, the upper a highly decorated thin sheet. Unfortunately these early forms of circular brooches suffer, as the ornamented part soon separates from the back piece. At a subsequent stage, a bronze rim was fastened round both the back and the front piece, holding them together. Those now described may have been of this type, but if so, the bronze rings have disappeared, and at a later period the edges of the brooches were upturned, giving a saucer-like pattern. It was common for this type of brooch to be worn in pairs, and probably they were connected with a chain. Each is just over 2 in. wide, and the pin, with its hook for attachment, is held in position by two pieces of thick bronze, forced through slits, and bent over at right angles, being hammered as flatly on to the disc as was possible. Over these turned parts the ornamental disc was attached. On the under side, one of the straps held a large rivet, round which the spring of a thick bronze pin was wound, the pin itself being held in position by the protecting loop, after the manner of the ordinary safety-pin. The ornamental disc, which, as already stated, is of a very thin bronze, has suffered by oxidisation during its burial, but at a distance of $\frac{3}{10}$ in. from the edge are three concentric circles, inside which is a five-rayed star, in the centre of which again occur concentric circles. The pattern shows best



on the under (protected) side of the disc, from which the design described above, was punched. This description applies precisely to both the brooches. A very similar brooch, with a five-rayed star in the centre, enclosing circles, is recorded from Fairford, Gloucestershire (de Baye, *tom. cit.*, p. 58).

At the waist was apparently a belt, the buckle or fastener for which is preserved (Fig. 3). The material is very thin bronze, ornamented by slight knobs made by hammering a pointed tool from the back. Each portion has perforations at the corners for attachment to the belt, and one side has a slit to receive the hook on the other. The former has three small holes in the centre, which may have been caused through the wearing of the protruberances, and the other has a single similar one towards the end. When together, the clasps measure $1\frac{1}{2}$ in. by $1\frac{1}{2}$ in., each piece being, of course, half that width.

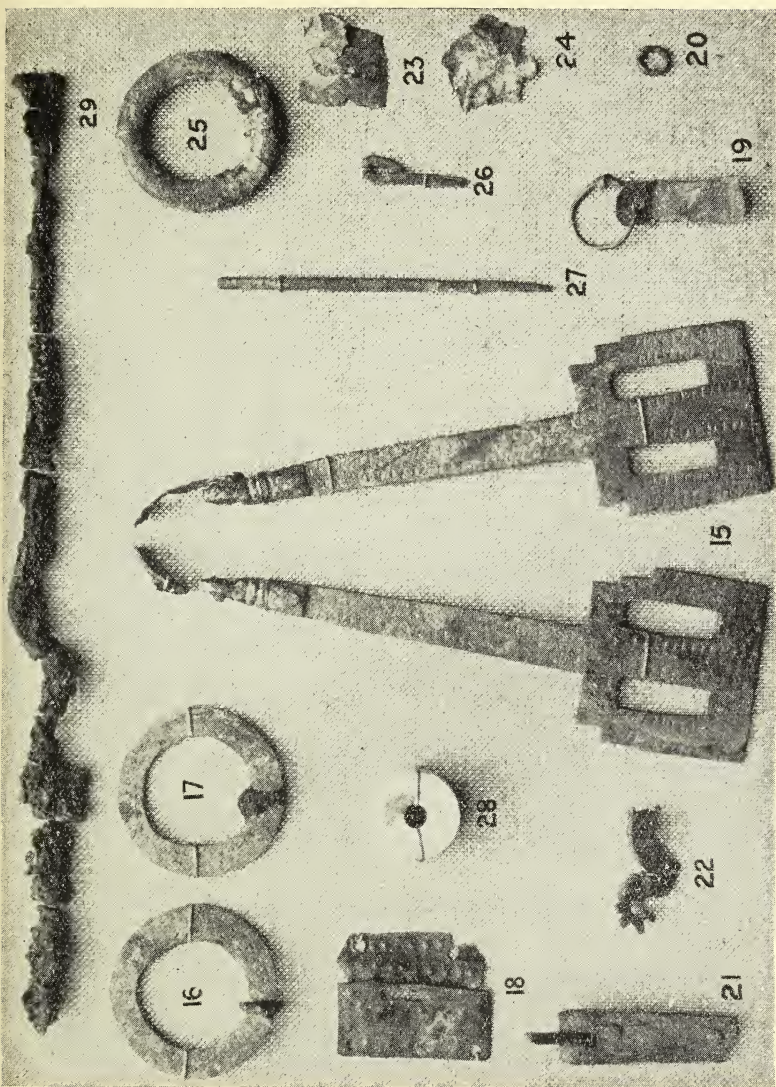
A particularly massive and heavy bronze plain ring occurred with this skeleton (Fig. 4). It is $2\frac{1}{10}$ in. wide outside diameter, and $1\frac{7}{10}$ in. inside, and resembles a modern curtain ring. There are two slight incisions in the outside edge, which suggests the place of attachment of an iron pin.

Also, at the waist, was a pair of chatelaines or girdle-hangers (Fig. 5), objects of great rarity north of the Humber and south of the Thames, but not so rare in the area between these estuaries, *i.e.* East Anglia.

The lower part of one of these is missing. The hangers were very elaborate, the lower part ornamented by two animal-like decorations at the sides, perforated with triangular and heart-shaped holes, the upper part almost resembling the horsehead motif of certain cruciform fibula. There is a curved piece of bronze at the top which still retains the iron rivets for fastening together the two portions of the chatelaines. This is flat, and slightly decorated on the outside with V-shaped impressions from a small tool. Similar impressions occur on the hangers themselves, while in different parts are two concentric circles.

The remarkable feature of this pair of chatelaines, as well as of the pair found with an adjoining skeleton, is that they have clearly not been worn before burial, but were new when interred. Every feature is as sharp as when first cast, and all the tool impressions are quite fresh. This applies also to the second pair to be described, in which case, in fact, the two portions of the chatelaines were pressed together on their flat undecorated sides and were stuck together when found. This suggests that these objects were clearly girdle-hangers and not merely the decorated ends of some purse-like receptacle, as some authorities have thought.

A similar instance of new jewellery having been buried



with the dead, occurred with the two particularly fine cruciform fibulae found at Londesborough, East Yorkshire, now in the Hull Museum (*Hull Museum Publication*, No. 33). These brooches are described by Professor Baldwin-Brown (*The Arts in Early England*, Vol. III, Plate XLIV) as the finest of the kind he knows.

Other objects with this skeleton were two bronze strap-ends (Figs. 6, 7), each $1\frac{3}{8}$ in. long, $\frac{1}{4}$ in. wide at the top, and tapering to a rounded end. The upper portion of each of these is decorated with two plain crosses separated with a horizontal line. Of another pair only one was found (Fig. 8), but it is similarly ornamented, and also has the perforation at the broad end for an iron rivet.

Similar strap-tabs were found at Driffield, one having a cross ornament almost identical with ours (Mortimer's *Forty Years Researches in British and Saxon Burial Mounds in East Yorkshire*, Figs. 770, 786, 808). A similar pair was also found in the Hornsea Cemetery (*Hull Museum Publication*, No. 97, Figs. 15, 16).

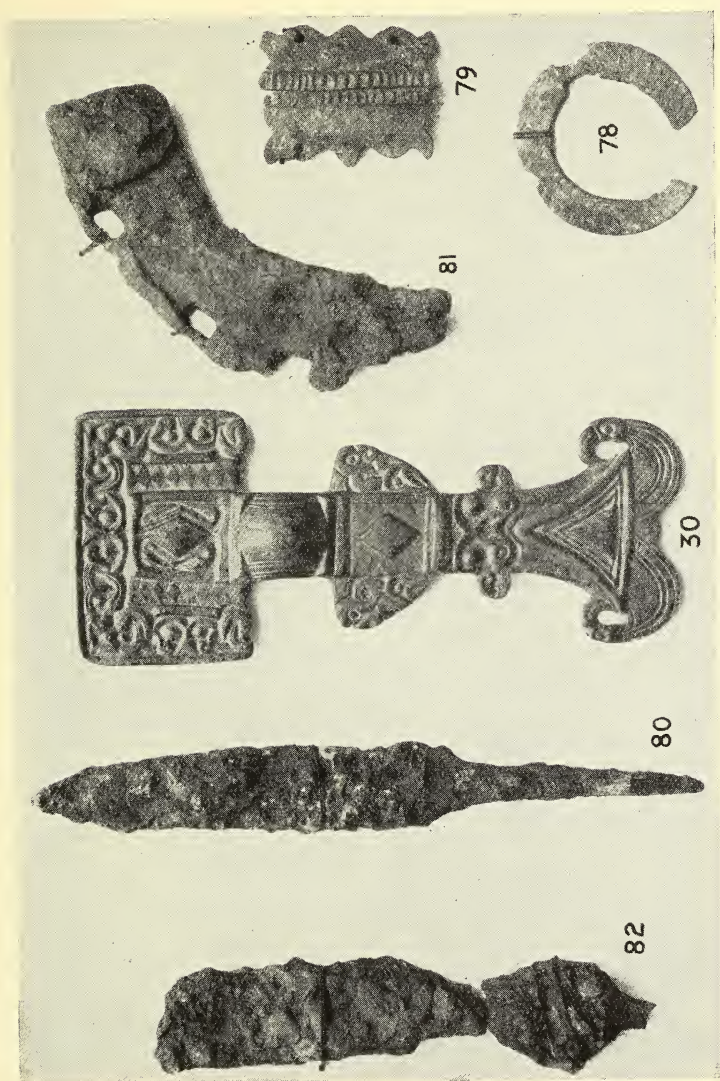
Perhaps the most remarkable object with this skeleton is an enormous ivory ring (Fig. 9), almost complete, which is over 6 in. in outside diameter, and $\frac{1}{2}$ in. wide, and nearly as thick. It has evidently been made from an elephant tusk of altogether extraordinary size, and still retains the structure of the ivory. If a bracelet, it is what might be described as an "outsize" specimen, but as it is stained heavily with bronze, it suggests that it might have been a rim of a small bucket, or large drinking vessel.

Similar ivory bracelets are also recorded for East Yorkshire.¹ With a skeleton found in a Saxon cemetery at Driffield, Mortimer states that 'near to the wrist were several decayed pieces of an ivory ring.' This skeleton also had 'a beautiful necklace, measuring 2 ft. in length,' consisting of 55 amber and glass beads. The amber ones were of similar construction to those recently found, and it also contained four thin blue glass beads, and, as with that recently discovered, a glass bead made of apparently two or more small glass beads joined, hour-glass wise. With this also was a strap-end decorated in the same way as those recently discovered.

With another interment at Driffield, besides bronze clasps, beads, and two iron keys, was 'a loop of ivory or bone 5 in. in diameter' (Mortimer, p. 292).

With one of the interments in the Hornsea cemetery (*Hull Museum Publication*, No. 97, p. 269) was 'a portion of a large ivory ring, probably a bracelet.' Other pieces were obtained but were broken and lost. When complete this

¹ Mortimer *Forty Years*, pages 279 and 293.



bracelet would measure 5 in. in diameter, was $\frac{1}{2}$ in. wide, and $\frac{1}{2}$ in. deep.

A similar burial is recorded from Kempston, in Bedfordshire. In that case there was a pair of disc-brooches on the shoulders, part of an ivory armlet $4\frac{3}{8}$ in. across, and other objects.

The two ring fibulae, Figs. 847 and 848, described by Mortimer as of bone or ivory are certainly bone, probably Cetacean; and the large bead, Fig. 788, also described as bone or ivory, is certainly from a deer antler.

A thin piece of bronze (Fig. 10), apparently an armlet, but broken, is also among the present collection, the end of which is not polished, and is perforated; its roughness evidently indicating where the other end of the piece of bronze overlapped. A similar bronze bracelet, but complete, was found by Mortimer at Driffield.

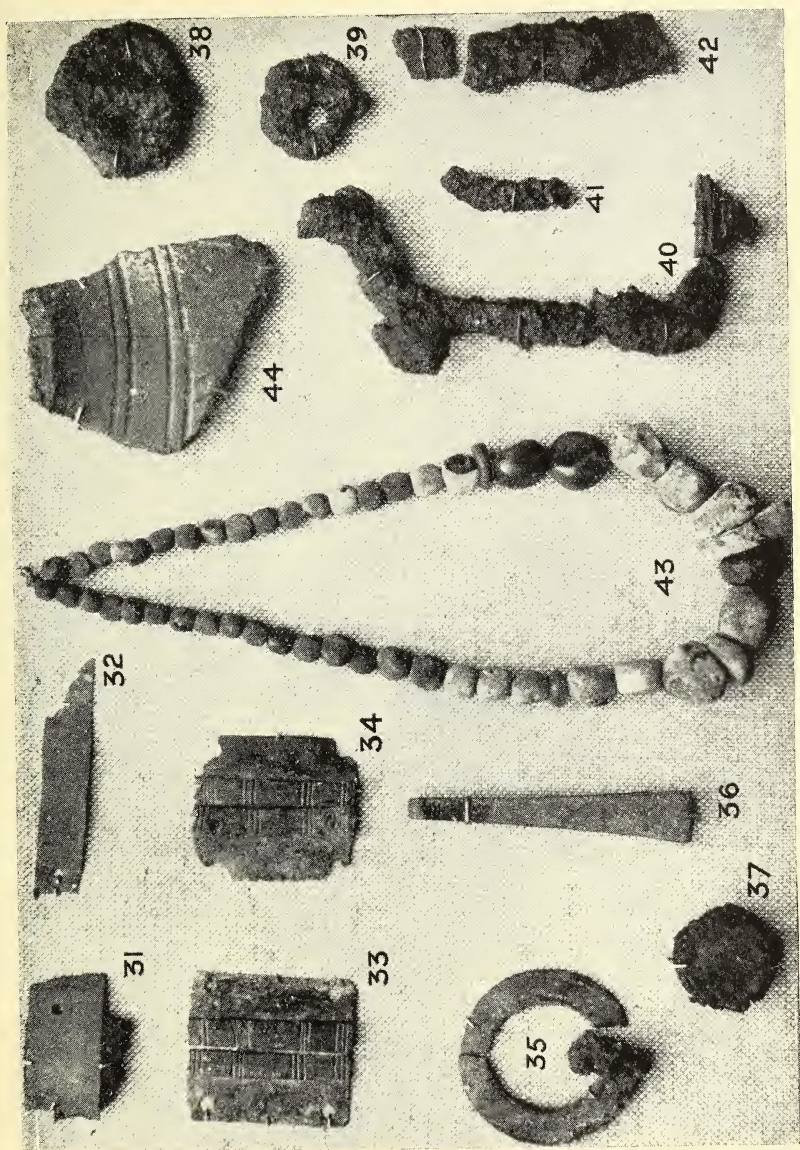
With this skeleton also was a long necklace of 83 amber beads of a rich colour (Page 7, Fig. 11). This was probably worn round the neck, though instances are known in the south of England, where they have been placed, epaulette fashion, on the shoulder. It includes two long thin beads of dark blue glass, each measuring $1\frac{7}{10}$ in. long and $\frac{1}{10}$ in. wide. An unusual feature in this necklace is a pendant consisting of a large shell (Page 3, Fig. 12), such as occurs in the Mediterranean, perforated at the smaller end for suspension. Unfortunately this is slightly damaged and is much stained with bronze. The species is scientifically known as *Cyprea pantherina* Sol., now usually known as *vinosa* Gmel., which antedates the first name. It is not certain that the shell was actually the centre-piece of this necklace, but all being found together, this is suggested.

In a necklace of 219 beads, which Mortimer found at Driffield, there were five cowry shells (*Cypraea europaea*) each about $\frac{3}{8}$ in. long, but these shells are found on the Yorkshire Coast to-day.

With a female Anglo-Saxon skeleton found at Burwell, Cambridgeshire, circa A.D. 650, was found a wood box containing shears, spindle whorl, and a large cowry shell similar to ours.¹

With our skeleton was also a small group of beads which possibly formed a bracelet (Page 7, Fig. 13). There are nine amber beads, the largest being nearly 1 in. in diameter, and the smallest $\frac{1}{4}$ in., and also three glass beads, the largest of almost black glass is somewhat after the melon type, and has a zig-zag line of white glass round the outer edge. Of a similar shape but smaller in size, is one of a beautiful shade

¹ Two cowries, larger than ours, labelled as 'from Indian Ocean' were found with an Anglo-saxon Skeleton at Wingham, Kent, and are in the British Museum.



of pale blue and white glass, the latter forming a triangle in the centre, and three panels round the outer edge. The third bead is barrel-shaped, and of light green glass without ornamentation.

With the second skeleton (Page 9) was found a wealth of ornaments and jewels which suggests the owner must have been a person of particular importance. On the chest was a necklace (Page 7, Fig. 14) of 80 large rounded amber beads with one small plain bead of beautiful dark blue glass, and four long thin beads of blue glass similar to the two on the previous necklace. With this also were two of the small glass beads gilded and welded together, hour-glass fashion, such as have been found, with amber necklaces, in the Mortimer Collection. There are three or four necklaces decorated in this way, such for example those from Driffield (see Figs. 851, 884, 888).

At the waist was a pair of chatelaines (Page 9, Fig. 15), which were perfectly new when buried, found adhering to each other on the plain sides; thus indicating that there was no woven material between the two. Though the decoration of the lower parts is different from the previous one, and not so elaborate, it is punched all round with a V-shaped tool similar to that used on the chatelaines with the first skeleton. There are two oblong perforations on each half to receive the objects which were hung on, and there still exists the curved hoop of bronze with the iron rivets for attachment, but a large mass of rust was adhering to this hoop, and probably was the remains of a large key (Fig. 29). Another iron fragment has evidently been enclosed in bronze in the form of a thin tube. It is $\frac{3}{4}$ in. in length and $\frac{1}{4}$ in. in diameter.

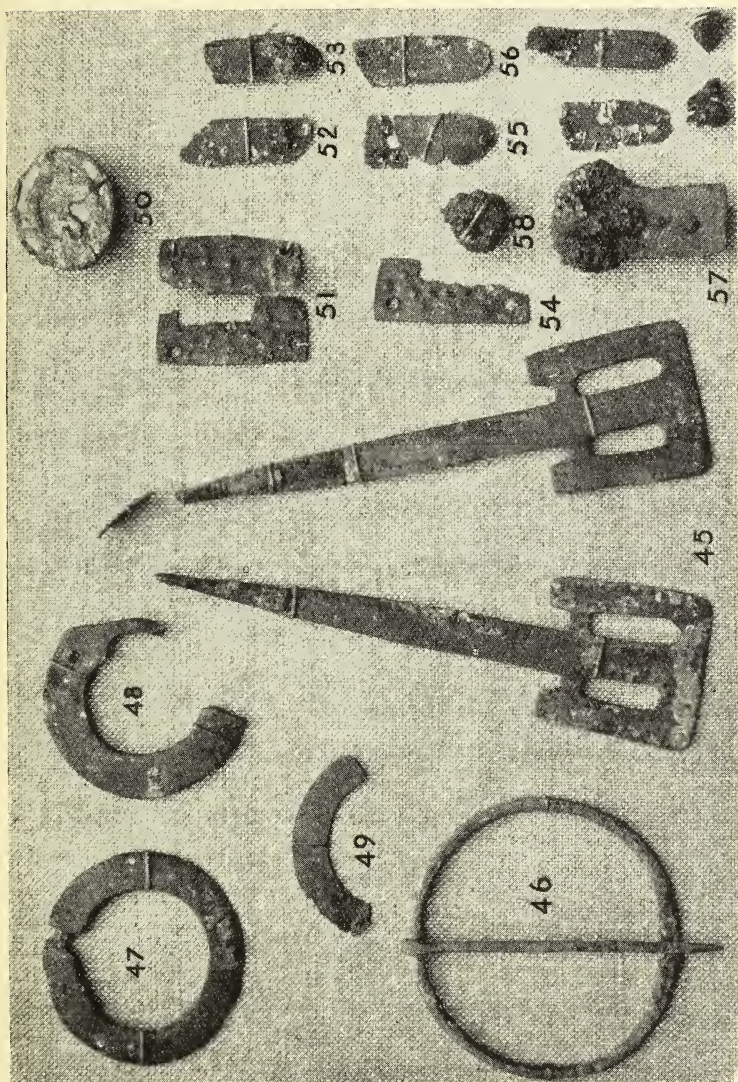
This pair of chatelaines has evidently had something unusual buried with it, as in place of the ordinary green patina, it is coloured a rich peacock blue.

On the shoulders was a pair of ring brooches (Figs. 16, 17), slightly over $1\frac{1}{2}$ in. wide, each of which was decorated on the upper surface by a punched tool, and each has a constriction in the bronze for the reception of the iron pin, the loop of which is still in position in both cases.

The brooches are decorated by two encircling lines made by a round punch-like tool.

At the waist of the interment also was a pair of thin bronze clasps for a belt (Fig. 18), one of which has a slit to receive the part bent over in the other. These, as in the previous instance, are decorated by being punched with an awl-like tool from behind, and each has two large holes at the corners for fastening.

There are two small rings (Fig. 19), one apparently of twisted silver, over $\frac{1}{2}$ in. in diameter, attached to which is



a thin piece of bronze $1\frac{1}{4}$ in. long by nearly $\frac{1}{2}$ in. wide, which resembles a strap-end in shape. The other ring (Fig. 20). is $\frac{1}{4}$ in. in diameter.

There is a buckle (Fig. 21) $1\frac{1}{2}$ in. long, $\frac{1}{2}$ in. wide, with the bronze tongue still in position. This has two rivets, one of which fastens the bent piece holding the tongue, and the other, at the opposite end, evidently for attachment to a leather belt.

Apparently as a decoration on this same belt, is a horse-shaped piece of bronze (Fig. 22), with two rivets for adjusting, precisely similar to those on the buckle, and both horse and buckle are silvered on the outside. The horse originally has been decorated with bronze, or other material, a small portion, which was round the eye, remaining. Numbers of these are figured on Plate IV of Baron de Baye's work already cited.

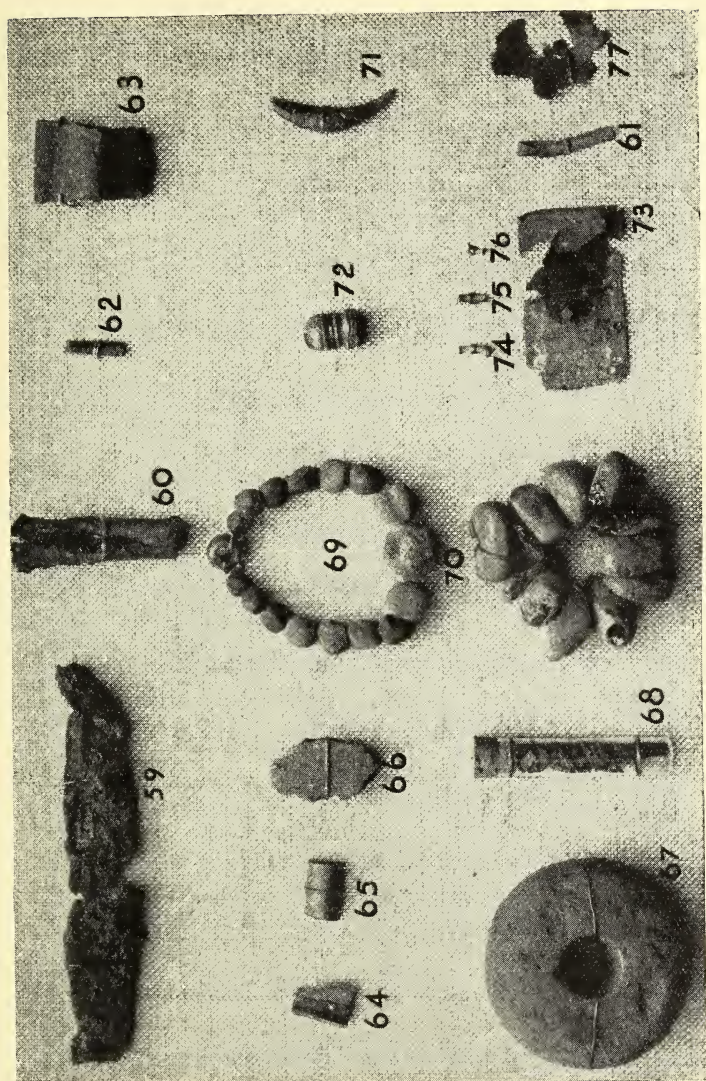
The other bronze objects include two flat pieces (Figs. 23, 24) which have evidently been attached to a saucer-brooch similar to those described, and a very massive annular brooch (Fig. 25) $1\frac{1}{2}$ in. in diameter, perfectly plain, but distinctly shows the place where the iron pin encircled it. From the peacock-blue colour of this piece, it was evidently, when buried, in proximity to the chatelaines.

There is a large hairpin of bronze (Figs. 26, 27) turned over, forming a loop at the opposite end to the point. This is of circular wire, bent and broken, and evidently a small piece is missing between the two fragments. A precisely similar pin, bent in the same way, from Driffeld, is figured by Mortimer (Fig. 80) and a similar example, also from Driffeld, but unbroken, is illustrated by him (Fig. 814).

A perfectly drum-shaped cylindrical bead (Fig. 28) of quite a unique character among East Yorkshire Saxon remains, is white, polished, 1 in. in diameter, nearly $\frac{1}{2}$ in. deep, with a well-drilled hole through the centre, $\frac{1}{4}$ in. in diameter. It is apparently of meerschaum, and has a stain of copper through having been in proximity to some bronze implement.¹ A large meerschaum buckle from Kempston, with typical Anglo-Saxon decoration on the pin, is in the British Museum (see *Guide to Anglo and Saxon Antiquities*, p. 74).

With a third skeleton some particularly interesting objects were unearthed, including the most elaborately decorated square-headed brooch (Page 11, Fig. 30) that has been found in the East Riding. It is evidently late in date, as the horse-head motif at the bottom has been elaborated to such an extent that its origin is almost unrecognisable. This brooch also has been heavily gilded, remains of the gilt being clearly seen, especially in the square head.

¹ A similar bead to our meerschaum example is in the British Museum from Taversham, Kent, with other Anglo-Saxon objects. The Taversham example is imperfect.



A specimen we have from the Hornsea cemetery is very similar in the lower part, but in the present example the square panels left blank at Hornsea have been decorated by raised lozenges in the centre of the panels, each being surrounded by small lozenges cut into the bronze. The central half-drum shaped portion, usually plain, in this case has horizontal decorations and a circular boss in the centre. From the illustration it will be seen that round the square head, the decoration has assumed the appearance of eyes, eyebrows, and noses of human faces; on each of the two wings at the centre, are three bird-like heads, and there is a human face in the upper part of the horsehead motif, the nostrils being curled round so as to form distinct heads very similar to those shown in the decoration on the Vendel helmet, where the God Othin is represented (see Plate 62B in *Scandinavian Archaeology*, by Shetelig and Falk, 1937).

The lower part of this brooch is so similar to the large one found at Hornsea (*Hull Museum Publication*, No. 97, Fig. IV), that it might fairly be assumed that they are both the work of the same craftsman. The raised triangular portions surrounded by incised lines are practically identical.

A similar brooch is figured by Mortimer (Fig. 829, Plate 103) from Driffield. This resembles the Hornsea example, in the square panels at the head and centre being more or less blank. With it another more elaborate brooch (Fig. 878) was also found by Mortimer, and as Lord Londesborough was joining him in excavating, evidently his Lordship took charge of this specimen. It is not in the Mortimer Museum. It is very similar to the example from Fridaythorpe sold a few years ago in London, and purchased by the British Museum, the authorities there having kindly given us a copy of it.

The recently found specimen measures 5 in. long, 2 in. across the top of the square head, $1\frac{1}{2}$ in. across the centre, and $1\frac{1}{5}$ in. across the nostrils. On the under side, which is cast flat with the exception of the boss, there are two raised pieces of bronze at right angles, to take the iron pin, and a spring loop for the pin point, which latter is still rusted in position.

Of particular interest is the upper portion of a thin wood drinking vessel which has a band of thin bronze (Page 13 Fig. 31) $\frac{3}{4}$ in. wide, containing one hole and a portion of a rivet hole, and these coincide precisely with the rivet hole in the wood. The thin piece of bronze with the skeleton No. 1 (Page 3, Fig. 10), is matched precisely with a similar one found with the present burial (Page 13, Fig. 32), and doubtless this is a similar encircling ring of bronze from a wooden drinking vessel.¹ This fragment is $2\frac{1}{5}$ in. long, $\frac{2}{5}$ in. wide, and has a circular rivet hole in the centre at one end.

¹ There are four or five small wood vessels with brass bands, each about 6" high and 4" wide, labelled "buckets" in the British Museum.

Of bronze are two pairs of belt clasps (Figs. 33, 34) of thin plain metal, $1\frac{2}{5}$ in. long, and when placed together $1\frac{2}{5}$ in. across, each piece, of course, being half that width. Each also has a large circular hole at the corner for attachment to the belt, and each has one half with a hook and the other has a slot. In these cases the middle portions were strengthened by thick pieces of bronze, each $1\frac{1}{2}$ in. long, $\frac{1}{4}$ in. wide, decorated by horizontal lines. One is still in position having been riveted. The other three have become detached, but the marks where they were fastened are distinctly shown.

Two precisely similar strengthening pieces were found with a similar bronze clasp at Hornsea (see Fig. 14 in *Hull Museum Publication*, No. 97), but these were then described as follows: 'The two objects shown in Fig. 14 are apparently part of a decoration of a strap as they are of the same length as the hinges, $1\frac{2}{5}$ in.' It is now clear that they are part of the clasp themselves.

Another object found is a plain penannular brooch (Fig. 35), similar to those already described, which has had a large iron pin, the hinge of which is still attached by rust.

Another interesting find of bronze is a pair of tweezers (Fig. 36) 2 in. long, $\frac{1}{2}$ in. wide at the cutting point, these being decorated by horizontal and perpendicular lines.

Another object is a circular disc of bronze (Fig. 37) $\frac{3}{4}$ in. in diameter, apparently quite plain, which is rusted to a mass of iron, behind which is a large rivet, and probably this is a strap ornament.

Of iron are two circular buckles (Figs. 38, 39) with a pin still in position, much corroded; the larger measuring $1\frac{3}{4}$ in. across and the smaller one 1 in. across. Other fragments (Figs. 40, 41) suggest a large key of a plain type, and a portion of a scram-a-sax (Fig. 42).

There was also an interesting necklace (Fig. 43) consisting of eight large circular beads of amber, three flat beads of the same material, the largest being just over 1 in. across, and the smallest $\frac{2}{5}$ in. The largest indicates that two attempts had been made to perforate it for the string. In the larger case the two holes joined, but in the smaller, the first attempt being unsuccessful, a larger hole, which is eccentric, was made at the side. There are also 37 globular amber beads about the size of small peas. A well-made flat bead of circular black glass is possibly originally in the centre; another of green glass is remarkable as it has been stretched while being made, the hole being three or four times the normal size, and there is a small round bead of plain blue glass. None of the glass beads is decorated in any way.

There is a sherd of Saxon pottery (Fig. 44) $2\frac{1}{2}$ in. across, which has the characteristic decoration of that period, and is

plainly from the neck of a cinerary urn, it having horizontal and perpendicular incised lines.

The fourth burial (Page 15), evidently of a female, has yielded some interesting finds, including penannular brooches, a disc brooch, a pair of chatelaines, two sets of belt clasps, a bronze belt strap with iron buckle, a spindle whorl, etc.

The two halves of the pair of chatelaines (Fig. 45) are typical in form, square-ended, each with two slits, one being longer than the other. The decoration is similar to that of the others found, and consists of perforations made by a small ring-shaped punch, impressed on the outside of each half. They are fairly solid, $5\frac{1}{4}$ in. long, and $1\frac{1}{2}$ in. wide at the base. One of the halves has distinctly been worn, and many of the perforations have been obliterated through use. With it was a small piece of curved bronze, decorated in the centre by a row of punctures, ten to the inch, and is clearly part of the semi-circular piece of bronze which was attached to the thin ends by iron rivets.

An unusual feature is a very large penannular brooch (Fig. 46) made of bronze wire; the ends where the brooch is divided to receive the pin, being slightly flattened. The bronze pin is particularly well preserved, and both pin and brooch are slightly decorated by indentations made at right angles to the wire. This brooch is still in good condition and the halves can be pulled apart to receive the pin. The brooch is $2\frac{3}{4}$ in. across, the copper wire being $\frac{1}{8}$ in. wide and the pin 3 in. in length, held on to the brooch by one end being hammered over.

Another penannular brooch (Fig. 47), with the iron pin missing, but otherwise complete, is just over 2 in. across, the bronze being $\frac{1}{2}$ in. wide, is fairly thick, and the brooch is decorated by chisel-like markings arranged close together. A portion of another brooch (Fig. 48) has a circular hole in the centre, presumably for a pin, but from this point the brooch is curiously cut away, giving the appearance of an elephant trunk. It is 2 in. across, the bronze being $\frac{2}{5}$ in. wide, and the broken portion has evidently been deliberately prized off as indicated by the up-turned edge, which is oxidised. A further penannular brooch (Fig. 49) is represented by about a half, and has traces where the iron pin was attached. It is $1\frac{3}{4}$ in. in length, $\frac{3}{10}$ in. wide and seems perfectly plain.

An oval disc-shaped brooch (Fig. 50) has the bronze attachment for the pin, and also the catch for receiving the point. It measures $1\frac{1}{8}$ in. by 1 in. in width, and the top has evidently been decorated with coloured enamels, a portion of a ring of white enamel being still visible round the edge.

There is a pair of thin clasps (Fig. 51) from a belt, decorated with raised knobs made by pressing an awl-like tool from the inside, and there is a large hole at each corner for attachment.

With this was found two slabs of bronze (Figs. 52, 53) with rounded ends, with the iron rivets still in position, and these apparently were fastened behind the two halves of the clasps for strengthening purposes. On the other hand, they may be the ordinary strap-ends for leather.

The greater portion of one half of a similar clasp (Fig. 54) decorated as in the previous specimen, and with two holes for attachment was also found. There are a couple of tab-ends in bronze (Figs. 55, 56), rounded, with the iron pins still in position, evidently from a strap, the thick end of which is probably shown in Fig. 57. This is a square piece of bronze, bent over, fastened together with two large iron rivets still in position, and with an iron buckle with a tongue. This is very similar to Mortimer's Figure 755, which was found with a female skeleton at Driffield. A round bead-like piece of iron (Fig. 58) was also found here. There are also the four bronze fragments shown in the bottom right hand corner of this plate.

There is a portion of an iron knife (Page 17, Fig. 59), 2 in. in length, with traces of the wooden sheath on one surface; and a bronze tube (Fig. 60), $1\frac{3}{4}$ in. in length, filled with iron, which is probably the butt end of a spear. There are two other small pieces of bronze, one (Fig. 61) a flat piece hammered over like a rivet, $\frac{1}{2}$ in. in length, and what is apparently the top of a small bronze rivet (Fig. 62).

There is a small squarish fragment undoubtedly from the rim of a Roman pot (Fig. 63), 1 in. in length by $\frac{3}{4}$ in. wide, the broken portions of which are well rounded with constant use, and doubtless this has been used as a knuckle-bone, which it certainly resembles, as a toy.

There are two portions of a bone tube stained with bronze (Figs. 64, 65), a little over $\frac{1}{2}$ in. in length, evidently made from the long bone of some small animal; a small sherd of typical Anglo-Saxon pottery (Fig. 66) in which are small fragments of calcite, and a spindle whorl (Fig. 67) of earthenware 2 in. wide with a circular hole $\frac{1}{2}$ in. in diameter, drilled through the centre. This whorl is of dark-coloured clay, the edge being well rounded, and is very similar to a couple of spindle whorls found with a cremated interment in an Anglo-Saxon vase at Sancton. (See *Hull Museum Publication*, No. 67, Fig. 13B).

There are several squared fragments of wood (Fig. 68) showing perforated decoration, which may have belonged to some small vessel.

A small necklace of 14 amber beads (Fig. 69), usually rounded or pea-shaped, varying from $\frac{1}{2}$ in. in diameter to $\frac{1}{8}$ in., was found with this skeleton. With it was a single flat blue glass bead, $\frac{3}{16}$ in. in diameter, with an exceptionally large hole for suspension, and two melon-like beads each divided

into four quarters, made of yellowish-green coarse glass, $\frac{2}{5}$ in. wide. A further necklace (Fig. 70) of 12 large amber beads, unusually square and flat, but of a beautiful port wine colour, was found. These beads average $\frac{3}{4}$ in. in width. There is also a canine tooth of dog or pig (Fig. 71), and the bronze projection or decoration from the shoulder of a square-headed bronze fibula (Fig. 72). This is cylindrical, deeply grooved, flat underneath, and has the iron rivet by which it was attached to the brooch. It is similar in type to the shoulder-piece shown on Mortimer's Figure 768 from Driffield.

An oblong piece of thin bronze (Fig. 73) $1\frac{3}{4}$ in. long by 1 in. wide, bent over at one end and doubled over to its entire length, is evidently from a leather strap. There are 8 holes for attachment on each side, and one large bronze rivet in position in the centre. With it are three other bronze rivets (Figs. 74, 75, 76) about $\frac{1}{4}$ in. long, and a bent strip of bronze (Fig. 77) which evidently was used for fastening the loose ends.

Among the other objects (Page 11) found in one of the cemeteries when first opened, were five pieces which cannot be assigned to any particular burial. The first is a nearly complete penannular brooch of flat bronze (Fig. 78), similar to two already described, but the decoration in this instance has been made with a punch in the form of a small circular comb, the constricted part for the pin is shown, iron oxide indicating that this pin was of iron. There is a particularly massive half of a belt clasp (Fig. 79), with the loop for the reception of the adjoining portion. It is plain, with the exception of a serrated ridge in the centre, the outside is decorated with five points through two of which are holes for attachment to the belt. Subsequently the other half of this pair of fasteners was discovered, and it is similarly decorated to the part already described. It contains the hook portion for insertion in the slit of the first piece.

There is an iron knife (Fig. 80), or *scram-a-sax*. It has one sharpened edge, and this particular example is over 4 in. long, but much corroded, and it shows the tang for attachment to a handle of wood.

An object of particular interest, which from its position seems to be contemporary and not later importation, is an ox-shoe of iron (Fig. 81), with three large holes for nails, and a pronounced thickening by overturning the iron at the back. Contemporary illustrations indicate that the Saxons used oxen on their farms and for transport.

An iron object (Fig. 82) probably the remains of a large *scram-a-sax*, as it has a distinct tang at the bottom for attachment.

The osteological remains are interesting and give some idea of the characteristics of the people who were buried with these

relics. There are eight skulls in more or less good condition, five being of men and three of women. The largest is well-preserved, and has a particularly prominent nasal bone which would give the owner the appearance of that type of personality represented by Sir Wilfred Lawson, General Booth, and the late J. R. Mortimer.

With regard to the size, shape and general appearance of the crania, they could be easily represented by people living in the district to-day. Generally speaking they are dolichocephalic, or long-headed, and in some cases have a pronounced ridge along the forehead. One example has a very low forehead. The teeth indicate the age of the owners as being in the forties and fifties, and in many cases they are suffering from caries, and in other cases they are worn, sometimes irregularly. Occasionally the molars have not met, and there is then no apparent evidence of grinding.

In one instance the lower jaw is particularly broad and pointed. In another small example of a small woman, or child, the jaw is stained through proximity to bronze. The same may be said about some of the ribs and a collar-bone. The femur in each case is well formed and represents a person of strength, but of not unusual height, which remarks also apply to the pelvic bones.

It is hoped eventually to have these skulls restored, but their very fragmentary condition makes this a slow process.

Among the smaller bones found with the human skeletons were, oddly enough, two humeri of pig, similar to those found in Iron Age vessels buried with people of the Iron Age, found at Eastburn, in the Danes' Graves, and other places in the Driffield area. It seems therefore that this old custom of 'Burying with Ham,' which was in vogue in the Iron Age, has continued during the Anglo-Saxon period!

In connexion with these finds, I should like to thank Mr. G. E. S. Lamb who first drew my attention to them; to Messrs. Major & Co., for permission to secure the specimens found on their premises; Messrs. Bradshaw & Atkinson for a similar privilege; and particularly to my young friends Master Colin Jackson and Mr. W. Shepherdson, both of whom have shown exceptional enthusiasm in collecting; and to two other helpers who wish to remain anonymous.

MACROCYPHON NIGRA-CAMPANULAE THEO.

DURING the autumn of 1936 a visit was made to a locality where *Campanula latifolia* L. grew in some quantity, in the hope that sexes of the above Aphid would be found. We were successful in finding the Aphid in plenty, each plant of *Campanula* having at least one colony on the under-side of the leaves. Deep Grove, 13/10/36, H.B. senr. and H.B. V.C. 62. H. BRITTEN.

THE YORKSHIRE NATURALISTS' UNION'S SEVENTY-SIXTH ANNUAL REPORT

(Presented at Wakefield on Saturday, 4th December, 1937)

The Seventy-fifth Annual Meeting was held in the Mining Department of the Technical College, Barnsley, on Saturday, December 5th, 1936. The Annual Report which was presented there was printed in *The Naturalist*, January, February, and March, 1937.

The Presidential Address on 'The Rise and Progress of Coleopterology in Yorkshire' was given by Mr. E. G. Bayford, F.R.E.S. This is printed in *The Naturalist*, 1937, on pp. 111-120.

The Presidency for 1938 has been offered to and accepted by Dr. H. Hamshaw Thomas, M.B.E., M.A., Sc.D., F.G.S., of the Botany School, Cambridge.

Field Meetings have been held in 1937 as follows:—V.C. 65, at Keld, Upper Swaledale, May 15th-17th, see *The Naturalist*, pp. 161-171; V.C. 62, at Hutton-le-Hole, June 5th, see *The Naturalist*, pp. 200-203; V.C. 61, at Bubwith, June 26th, see *The Naturalist*, pp. 204-208; V.C. 64, at Blubberhouses, July 10th, see *The Naturalist*, pp. 225-227; V.C. 63, at Doncaster, July 31st-August 2nd, see *The Naturalist*, pp. 258-264; Fungus Foray, Pocklington, September 4th. The Freshwater Biology Committee had their field meeting at Keld and the Entomological Section had their field meeting at Bubwith.

The Excursions for 1938 will be as follows:—

May 14th. Upper Nidderdale, V.C. 64.

June 4th-6th (Whitsuntide). Pickering V.C. 62.

June 25th. Askern, V.C. 63.

July 16th. Hedon, V.C. 61.

July 30th-August 1st. Sedbergh for Cautley, V.C. 65.

The following changes of address have been notified during the year:—

Miss M. E. Malins to 127 Otley Road, Leeds 6.

Dr. S. G. Smith to 9 Cromwell Avenue, Gatley, Cheshire.

Mr. C. W. Dyson to 31 Upper George Street, Huddersfield.

Mr. and Mrs. J. P. Utley to Roova Garth, Woodburn Drive, Leyburn.

Dr. W. A. Sledge to 27 Weetwood Lane, Far Headingley.

Mr. E. Dearing to 135 Park Road, Elland.

Mr. T. O. Morris to Crosswinds, Menai Bridge, Anglesey.

Mr. M. Malone to 64 Westfield Road, Heaton, Bradford.

Mrs. L. M. Bilbrough to Woodcroft, Hawthorn Grove, Rodley, Leeds.

Mr. A. Wood to 33 Church Lane, Methley.

Membership.—The following new members have been elected during the year, making a total of 301:—

Mr. W. Buckley, Commercial Road, Skelmanthorpe, Huddersfield.

Miss K. A. Clarke, A.R.H.S., Training College, Bingley.

Mr. R. M. Garnett, Whitbygate, Thornton-le-Dale.

Mr. T. L. Gwatkin, B.A., Belle Vue Library, Halifax.

Mr. E. G. Highfield, Crabtree, Pickering.

Dr. W. Hobson, B.Sc., M.B., Ch.B., M.R.C.S., L.R.C.P., Sch. of Medicine, Leeds.

Mr. G. A. Russell, 14 Brooklyn Avenue, Dalton, Huddersfield.

Rev. C. E. Tottenham, M.A., F.R.E.S., The Vicarage, East Ardsley.

Mr. E. Wilson, 15 Dixon Terrace, Harrogate.

Miss Edna M. Lind, Ph.D., The University, Sheffield.

The following have resigned:—

Mr. F. Allen, Greenfield, Oldham.

Miss D. M. Browning, Yeadon.

Mr. W. S. Lealman, Kirbymoorside.

Rev. E. Peake, Huntingdon.

Dr. B. Stewart, Leeds.

Mr. A. E. Thornes, Scarborough.

Dr. W. H. Valentine, Ilkley.

Mr. A. J. A. Woodcock, Gillingham.

Mr. R. G. Warren, Keighley.

Mr. A. A. Dallman, Doncaster.

Miss E. Chamberlain, Leeds.

Mr. J. W. Stather, Hull.

Rev. W. L. Schroeder, Leeds.

Obituary.—We are sorry to record the death of an old life member of the Union, the late J. H. Rowntree, of Scarborough. The Vertebrate Section has lost one who did a great deal of work before he left the county in the late E. W. Wade, who was one of our Honorary Life Members.

Delegate to the British Association and also to the **Wild Plant Conservation Board of the Council for the Preservation of Rural England**, Mr. Thomas Sheppard, M.Sc.

Wild Plant Conservation Board.—The Union's representative, Mr. T. Sheppard, has kept in touch with the Board's work.

British Association.—The Union's delegate, Mr. T. Sheppard, attended the Annual Conference of the British Association for the Advancement of Science, at Nottingham.

The Naturalist.—The Editors report that the standard of articles submitted is well up to standard. Last year it was pointed out that much North Country Natural History work goes unreported in *The Naturalist*, and, therefore, it is with much satisfaction that the Editors are now able to submit a scheme which, it is hoped, will bring in many records and articles which might otherwise not reach us. Full details of this scheme appeared in the December (1937) number of *The Naturalist*.

VERTEBRATE ZOOLOGY SECTION

MAMMALS, AMPHIBIANS, REPTILES AND FISHES REPORT

Mammalia (Miss E. Gallwey) :—A pair of horns of the Neolithic Ox in good state of preservation were found on the peat moors between Shooters Nab and West Nab near Meltham, Huddersfield, in May by Mr. J. E. Quarmby, of Marsden, who kindly presented them to the Tolson Memorial Museum at Huddersfield.

There is a large herd of fallow deer in Aldby Park, York, and their numbers appear to have increased of late years, thanks to the protection afforded by Colonel Darley.

Foxes in the York and Huddersfield districts are very numerous and their depredations are deplored by local farmers, despite interest taken by various hunts. They are often seen on the outskirts of the City of York, where they enjoy a certain immunity because of the difficulties of hunting the smaller holdings. One pair had their earth in a garden at Huntington and cleared a lot of poultry before they were discovered and dug out by the Middleton Hunt, who took away the cubs to be turned down further from town and where damage could be minimised.

Otters generally put in an appearance somewhere near York every year, and 1937 was no exception as a family of two adults and three young ones had their 'holt' in an old drain off the River Foss at Layerthorpe Bridge in the heart of the city. Mr. Smith watched them in broad daylight disporting in the water on March 15th, but repeated stoning by children caused them to depart, but probably not far, as on April 11th an Otter paid a visit to the pond in his garden at Elmfield and cleared out a number of roach and some trout. Several Otters were killed by hounds in that area.

Badgers are not uncommon around York and have been observed in well-known haunts at Kirkham and Castle Howard. They have also been heard although not seen, in New Hall Woods on the Bretton Estate near

Wakefield, and a pair were killed in the spring at Fulston Belth near Sheffield.

On the afternoon of November 19th, 1936, whilst walking through Highbridge Wood near Skelmanthorpe, Mr. Lawton noticed a strange animal sitting on a low wall, and he was able to get within six yards of it. Its characters fitted those of a Pine Marten, and in his excitement he said aloud, 'It's a Marten,' whereupon it leapt into the wood, alighting on a small shrub, then gave another leap of four or five yards up onto a bough of a large tree, where he had ample opportunity of observing it, and he is satisfied with his identification of it as a Pine Marten. It is interesting to note that one was shot in Cannon Hall Park in 1878, only about 2½ miles away from Highbridge Wood.

Weasels are fairly common throughout the Huddersfield district, but Stoats seem very local and much more common on the moors than in the scattered woodlands which are almost all kept for game. Mr. Smith found both Stoats and Weasels common around York.

On December 15th, 1936, Mr. Smith saw a Hedgehog at High Catton which had come out after a spell of hard frost and a rise in temperature of 15 deg. F. Mr. Booth saw the first this year out on May 5th—the weather had been cold with north-east winds for some time; on June 12th there was a nest at Ben Rhydding containing three newly-born young. Hedgehogs seem to have been exceedingly numerous this year, but without specially studying this species it is difficult to say whether this is the result of special conditions of climate and food supplies, or the result of a cyclic period which occurs frequently in nature and affects particularly some species or another. Mr. Smith noticed them in his own garden many times during the last few months and has caught several in the wire traps usually kept set for rats, and being unharmed, they were released to pursue their wanderings. They also seem to have done well throughout the Huddersfield district, and my dog has located them rummaging in the garden.

Red Squirrels have almost disappeared from the York district, and Mr. Smith has only heard of one being seen at Buttercrambe. The Grey Squirrel, however, is everywhere and they are common on the outskirts of York wherever there is a patch of woodland. Occasionally a Grey Squirrel is noticed in the City, and as recently as September 25th he had one in his garden, where after a little exploration it disappeared and has not again been noticed. At Bolton Percy Mr. W. G. Bramley reports increase in the numbers of Grey Squirrels, but states it to be somewhat slow as compared with some areas. A few Grey Squirrels have been reported in the suburbs of Bradford, viz., two or three in the Crag Woods at Rawdon, and one at Eccleshill, but Mr. Booth has no reports from the dales excepting of one seen several times at Ilkley in August. Only one Grey Squirrel is recorded for the Huddersfield district, from Grange Moor during 1935, but Red Squirrels are very common and seem to be on the increase.

Mr. Bramley states that Long-tailed Field Mice are more numerous than during the preceding three years, and Mr. Smith has also noticed this around York; the same applies to the common Short-tailed Field Voles. Brown Rats have been a plague in spite of extensive killings by farmers and other interested bodies.

Rabbits are fairly numerous and Hares also have enjoyed a good season. A half-grown Hare was seen at Bolton Percy on April 9th and three Leverets were found there under a corn stook on September 10th, this family being only a few days old. At Whitley Beaumont, near Huddersfield, the Rabbits have so deteriorated in size and quality due to inbreeding that tame Rabbits have been turned loose among them in the hope that the stock will be enabled to pull up again.

Amongst the Bats seen by Mr. Smith are the Noctule, Long-eared, and Pipistrelle, along with other species not named because they could

not be clearly identified flying in the evening dusk. Long-eared Bats are also quite common at Ravensknowle, Huddersfield.

Moles have also been very much in evidence to the great regret of farmers. This appears to be somewhat extraordinary in view of continued dry spells and consequent hard ground.

Thus, taking things all round, 1937 appears to have been a really good year for Mammals.

Reptilia (Miss E. Gallwey) :—Two large Adders were seen at Strensall in August. They are generally much rarer in this area, probably as the result of so many heath fires during the past few years. Mr. Chislett has found both Adders and Grass Snakes rather more numerous than usual this year in South Yorkshire, and says he frequently came across Adders in the spring months. Quite a number of Grass Snakes were reported in and around Bradford this summer, including a large female 42 in. long that was killed in a back-yard in Great Horton on June 2nd, but Mr. Booth thinks that probably most or all may have been escapes. Neither Grass Snakes nor Slow Worms have been seen this year in the York district, no doubt from the frequency of heath fires, too. A few Common Lizards were observed there during July.

Amphibia (Miss E. Gallwey) :—Mr. Smith saw two pairs of Toads at Elmfield as early as February 26th, and shortly afterwards many hundreds appeared, all making for the old brickponds, where they usually deposit their ova.

Frogs were comparatively scarce, and although they bred successfully at this place, many of their usual haunts were deserted and later in the year were dried up. Mr. Bramley says they were in normal numbers at Bolton Percy and spawn was noted there on March 20th. Early in April Mr. Chislett was rather interested to find that Frogs had spawned in some pools left by floods which dried up a few weeks later, only about a hundred yards from the permanent pond in which they spawn annually. At Huddersfield ground frosts persisted into May, and spawning by both Newts and Frogs seemed to be much delayed. The Frogs, after spawning, went back into the mud for continued hibernation ; in quite a number of spawning ponds there seemed to be a heavy mortality among Tadpoles, in some cases due to the evaporation of so much or all the water, and consequently there was a considerable decrease in the number of young Frogs. Crested Newts are also in the district.

Pisces (Miss E. Gallwey) :—Mr. Booth informs me that on October 20th, 1936, a large Pike weighing $11\frac{3}{4}$ lbs. was caught in the River Aire, near Skipton, by Mr. Wm. Phillip. This is the largest Pike that has been caught in the Aire for a great number of years.

Mr. Smith states that a fair amount of flood water during January enabled Salmon to move freely in Yorkshire rivers, and five of these large fish were seen by Mr. Storey in the River Rye at Hemsley Bridge on January 15th. It is not often they are able to ascend as high as this. On May 19th some more flood water had drawn Salmon into the Derwent and having passed Sutton weir, several were trying vainly to jump the obstructive nine-foot weir at Stamford Bridge, he believes, without ultimate success.

Flounders regularly ascend the River Derwent and numbers are taken about Sutton weir by rod anglers, and Mr. Smith has a note of some taken there on April 15th ; the same date provides a record of the now rare Burbot, weighing 11 ozs., at the same place.

The angling season has been a poor one for Trout, and no outstanding records have been made.

Mr. Zimmermann states that he counted forty-two dead Pike up to 4 lbs. in weight floating in the River Foss, near Huntington, early in August. It is not unusual to find a lot of coarse fish dead there about this time of the year, and Mr. Smith suggests de-oxygenation of the

water to be the cause, and due to lack of fresh supplies from Oulston Reservoir and dry periods of warm weather.

In September Mr. Smith lost all the stock of Trout in his own three-quarter acre pond from the same cause, these fish being the first to die and are usually followed in order by Grayling, Perch, and Roach. On this occasion, however, a heavy rainstorm just saved the two last species because they had come to the surface and were 'sucking air,' a procedure that is usually followed by the death of the fish.

On September 14th Mr. Smith handled three Allis Shad, each 17 in. long, which had been taken in the fishermen's nets at Filey, where they are locally termed 'Rock Herrings.'

I am indebted for help in compiling this report to Messrs. S. H. Smith (York), H. B. Booth (Ben Rhydding), V. G. F. Zimmermann (York), W. G. Bramley (Bolton Percy), A. Smith (York), R. Chislett (Rotherham), and F. Lawton (Skelmanthorpe), who have kindly forwarded me their observations.

North Riding (W. J. Clarke) :—**MAMMALS**.—There has been little of interest observed amongst mammals. Foxes are numerous, and Badgers much commoner than is supposed. Rabbits have been less abundant during the past year, and Hares have been so scarce that the usual coursing meetings have been abandoned.

Otters are still not uncommon on most of the streams. One noticed at Forge Valley in April, 1937, had been feeding extensively on toads, which had been carefully skinned, the heads and skins being rejected. The otter hounds killed one at Hackness in the first week in August.

Field Voles have been scarce throughout the year, but the numbers of Water Voles have shown an increase. Fifty-four Black Rats were killed about the piers and harbour between October 1st, 1936, and October 1st, 1937. No Brown Rats were caught here. A male Brown Rat weighing 1 lb. 4 ozs. was killed at West Ayton on November 4th and was the largest caught during fifty years of ratcatching.

Grey Squirrels do not decrease in numbers and are increasing in the Sleights district. At Littlebeck a gamekeeper shot 25 in two days. They are also abundant about Hutton Buscel and have penetrated within the Borough boundary of Scarborough. The numbers of Red Squirrels do not show any increase and this species remains scarce.

A number of Common Seals, including some quite young pups, have been seen on the shore during the year. The very tame specimen which has lived in the harbour at Scarborough still continues to visit it, and occasionally brings a companion.

Two White-beaked Dolphins were caught in the salmon nets within 100 yards of the pier at Whitby on August 3rd. The larger of them measured 8 ft. 0½ in. One was harpooned off Scarborough by Dr. Deiter on August 11th and measured 8 ft. 6 in.

Four Killer Whales were seen off Scarborough, and a good photograph obtained of two of them on August 14th. The largest was estimated, by comparison with the length of the yacht, to measure 35 ft.

Porpoises have been plentiful during the warm months. One was caught on rod and line, and weighed over 3 stones.

FISHES (W. J. Clarke) :—Several of the stunted variety of the Common Cod, known to the fishermen as 'Lord Fish,' have been caught during the year.

Red Mullet have been less seen and only one was noted, one of the striped variety, trawled on December 30th, 1936, at Scarborough.

Tunny were first seen off Scarborough on July 22nd and were very abundant during August and September. Fourteen were caught on rod and line, from 707 lbs. down to 34½ lbs. in weight.

A Fifteen-spined Stickleback was washed ashore in the North Bay, Scarborough, on April 12th.

A Torsk weighing $2\frac{1}{2}$ lbs. was caught off Whitby on June 26th by the fishing boat *Galilee*.

A Lesser Forkbeard was captured on rod and line on September 4th.

A Snake Pipefish, 18 in. in length, was caught at Cloughton Wyke on February 2nd.

Shads have not been so plentiful as last year. Five Twaite Shads, the largest 16 in. long, were trawled off Scarborough on February 8th. The same catch also contained a single example of the Allis Shad $17\frac{1}{2}$ in. long.

Basking Sharks have been reported more or less credibly on several occasions during the summer months. A small specimen measuring $10\frac{1}{2}$ ft. was caught in the salmon nets close inshore at Whitby on August 6th. Porbeagle Sharks have been plentiful.

A Sting Ray was caught at Whitby on October 19th, its tail measured 2 ft. in length with a spine 4 in. long. So evidently it was a good-sized specimen, but precise details are lacking.

West Riding (H. B. Booth, F.Z.S.) : ORNITHOLOGICAL REPORT :—At the end of December, 1936, a small party of Red-breasted Mergansers visited Upper Wharfedale. One was seen on Chelker Reservoir on December 30th (W. F. Fearnley) ; another was shot in mistake for a Mallard at Bolton Abbey and was sent to the Craven Museum, Skipton, and another was shot at Addingham (Rev. C. F. Tomlinson).

On February 28th, after a N.W. blizzard, a Goosander was reported at Bolton Abbey, a Little Auk at Wilsden, and a Shag on Oxenhope Reservoir (R.B.). About this time several gaggles of Wild Geese were reported as flying overhead. Early in March a Shag spent several days diving in the Wharfe near to the old bridge at Ilkley, and towards the end of the same month a Gannet in immature plumage alighted near the same place. Another Gannet, in its first year's plumage, came down in a level field at Arthington on September 20th, and did not appear able to rise. After having been taken to Otley Police Station it was liberated on the River Wharfe, when it swam away.

HERONS.—In the Gargrave heronry there were 35 occupied nests on April 18th, mostly in oak trees (W.F.F.). At Harewood Park there were 13 nests on May 9th, all in tall beeches. At Hubberholme there were five—or possibly six—nests all in tall, dense spruces. Mr. Eric Wheeler and his brother spent the most of the day of April 11th in the heronry in Shire Oaks Wood, Healaugh, and carefully counted 24 occupied nests. Of these 15 were in oaks, 8 in spruces and 1 in an ash. Many of the large spruce trees had been blown down and others felled. Most of the nests contained chicks, but one had five eggs in almost ready to hatch. At Bolton-in-Bowland I was only able to find one pair of Herons and one nest. Therefore, the Herons in the West Riding are just about holding their own, being four nests more than in 1936. The Gargrave heronry is this year a record, not only of itself but of any heronry that I have known in the West Riding.

GULLS.—The breeding station at Pinhaw, on Elslack Moor, although of recent growth, had become by last year the largest nesting colony of this species at present in the West Riding. This spring Mr. F. J. N. Dufty informed me that the owner was compelled to have the bog drained, owing to losing so many sheep in it. He protected the Gulls and their eggs and never allowed any to be shot ; but after draining they all left the place to a bird. But a few gradually filtered back again and on May 29th Mr. W. J. Forrest counted 31 nests with eggs in, and estimated that there would be about 100 birds around the swamp. The other nesting sites of this species in the Riding appear to be slowly dwindling both in number and in size, chiefly owing to draining, but in a few cases from persecution by gamekeepers, who accuse the Blackheads of searching for and eating the eggs of the Red Grouse ; an accusation that I have never seen proved yet.

On December 6th, 1936, Mr. A. Gilpin carefully identified a Great Black-backed Gull at Eccup Reservoir.

GREAT CRESTED GREBES.—The pair did not return to Malham Tarn at all this year, and the eggs of the pair at Chelker were robbed twice at the least as the water receded, and the birds then left. One pair successfully nested each at Eshton Tarn and Coniston Cold, and two pairs had broods on Fewston Reservoir this year.

ROOKS.—Since her father's death, Miss Dorothy Clough has, at my request, continued to count the occupied nests in the Steeton Hall rookeries, including Shrogg's Wood. In 1936 there were 341 nests, the greatest number since 1921. In 1937 there were 324 nests—175 at Steeton Hall and 149 in Shrogg's Wood. There has not been a single successful Rook's nest in or around Ilkley this year. Some half-dozen nests were built and then deserted. A Rook with a white streak across each wing was reported at Guiseley in August (W.F.F.).

OTHER NESTING NOTES.—A pair of Oyster-catchers successfully nested at Gargrave in 1936, and returned and nested in 1937 (F.J.N.D.). This is a new nesting record for the West Riding.

At last the Ringed Plover has nested at Malham Tarn (*Naturalist*, 1937, pp. 219-222). This has been a long-expected event. A pair of Little Owls have brought off a brood near Luddenden Foot, the first-known nesting of this species in the Parish of Halifax. They were discovered by Mr. H. Walsh (W. Greaves).

A pair of Swallows reared 14 young in three broods, 5, 5 and 4 in a shed behind the rectory at Bolton Abbey. In 1935, 15 young birds were reared in the same shed. In 1936 only one bird returned, and it remained alone all that summer (Rev. C.F.T.). Such are the vagaries of migration!

A pair of Jays was reported on good authority to have nested just outside Howden Wood, near Silsden (R.B.). A brood was reported to have got off in Middleton Wood, Ilkley. Your recorder tried to locate this family party, but was not successful. A Jay's nest in this district is a very rare event. Both Green- and Greater-spotted Woodpeckers are increasing and extending their range in Upper Wharfedale and in Upper Airedale. This year a pair of Green Woodpeckers has brought off a brood in Ben Rhydding (W.F.F.).

STRAY NOTES.—A Water Rail was killed by flying against an electric pylon on Haworth Moor on November 17th, 1936 (R.B.).

A Quail was shot on September 23rd on the edge of the moor (about 900 ft. above sea-level) above the village of Weston, in Wharfedale (F. H. Edmondson). It was evidently emigrating, but surely at an unusual altitude! The bird was sent to Keighley Museum.

A Common Buzzard was reported near to the Golf Links on Ilkley Moor on September 20th by the Rev. P. L. Watchhurst in the *Ilkley Gazette*. He was guided by its large size in comparison with two Kestrel's that were near to it. The head gamekeeper at Denton on the other side of the valley saw a 'large Hawk' over his moor about the same time, which would probably be the same bird.

A Grasshopper Warbler was heard and seen at Aberford on May 2nd (A.G.). Another was heard at Halton Gill, Bolton Abbey, on May 3rd and 5th (W.F.F.) and on the latter date also by your recorder. It was singing in a subdued tone as if settling down to nest. The site was in a wired-in Pheasant-breeding preserve, and no further evidence of its nesting was obtained.

A Kingfisher ringed as a nestling at Shipley on June 28th, 1936, was recovered at Pendle Forest (Lancs.) on February 13th, 1937, and a Woodcock ringed as a chick in Denton Park, Ben Rhydding, on May 25th, 1936, was recovered at Harewood on January 13th, 1937 (*British Birds*, Vol. XXXI, p. 116 and p. 141).

A Nuthatch regularly attended the bird-table at Bolton Abbey

Rectory from October to April, but all efforts to find it, or its nest, during spring or summer, again failed (Rev. C.F.T.).

It would appear as if a belated immigration of Waxwings visited the West Riding. The Keighley Museum received one from near Horton-in-Ribblesdale in March and another about Easter from Embsay (R.B.).

The Common Whitethroat has been more common than usual, but the Redstart continues to return in smaller numbers. Mr. R. Chislett informs me that there has been fewer Nightingales in the south of the Riding this year.

Mr. Arthur Gilpin has again watched Eccup Reservoir. He saw the first Golden Eye (a male) on October 31st, a pair on November 28th and December 5th, a female only on December 12th and January 3rd, two males and four females on February 7th, and two males only on February 21st. The first Goosander (an immature male) was seen on October 31st. Throughout November and December the birds present averaged from six to twelve. On February 7th there were seven males and eight females, and on February 21st seven males and twelve females. Miss E. Gallwey reports an influx of Grebes on Blackmoorfoot and Longwood Reservoirs, near Huddersfield, in February; Great Crested, Slavonian, and Black-necked Grebes being present. Our Halifax friends, Messrs. V. S. Crapnell, G. R. Edwards, H. Foster, W. Greaves, and F. Murgatroyd, have again been very busy watching the higher reservoirs in their district, often visiting them twice and thrice weekly, and with excellent results.

At White Holme Reservoir the following birds were seen :—

A Bar-tailed Godwit on August 10th. Three Black Terns on August 23rd, 24th, and 25th, four on August 28th, and one on September 1st and 5th. A Green Sandpiper on August 22nd, and a Little Stint on September 28th. A Greenshank on August 22nd, one on August 29th, and two on September 1st. A Grey Plover on September 29th, and three on October 10th. Two Knots on August 15th, one on August 22nd, and two on September 20th. A Red-necked Phalarope (very tame) on August 15th. Ringed Plovers were seen in varying numbers from one to nine at various times from July 16th to October 6th. Two Ruffs on September 20th, and four on September 22nd. A Sanderling on July 18th, and another, or the same bird, on July 25th. A Peregrine Falcon was seen flying and at rest on August 29th and September 5th. Two Turnstones on August 8th and 10th, one on August 12th, and several on August 15th. A Whimbrel on August 10th and 12th, and two on August 25th. A White Wagtail on September 5th. Eight Common Scoters on June 26th, four on July 18th, two on August 3rd, and eight on September 28th. Six Golden Eyes on August 23rd. A Sheld-duck on August 15th, and three Wigeon on September 20th. A flock of about thirty Common Sandpipers on July 18th and a Common Gull on September 12th.

The following were seen on Withens Reservoir :—

A Greenshank on September 5th. A Common Scoter on February 6th and ten on July 18th. Five Golden Eyes on February 6th and six on February 7th. Seven Pochards on January 1st, five on February 6th, and eleven on February 13th. Three Wigeon on January 10th and a Scaup on August 15th. A Slavonian Grebe on September 9th. Four Tufted Ducks on February 6th, five on February 7th and 15th, three on May 21st, and one on October 3rd.

On Blackstone Edge Reservoir a Red-necked Grebe was seen on August 1st, and five Common Scoters in July.

A Turnstone was seen at Ringstone Edge Reservoir on May 5th.

A Green Sandpiper was at Gorpel Lower Reservoir on August 29th; and a number of Wigeon and Pochard were on Gorpel Upper Reservoir on January 31st.

A Golden Eye was on High Royd Sewerage Works on January 9th.

On Fly Flatts Reservoir there were a number of Pochards and Tufted Ducks on various dates.

A small flock of about half a dozen Siskins was seen in Hebden Valley, Hebden Bridge, on January 3rd and 5th. At Fairburn there were six Sheld-ducks on April 25th (A.G.) and a Red-necked Grebe on March 14th.

York District (Sydney H. Smith, J.P., F.Z.S.) :—The early part of 1937 was marked by extremely bad weather. January was distinguished by cold rain and gales of wind ; February provided a lot of snow, and a terrific storm on the 28th blocked all the roads. On March 10th there was hard frost on deep snow and the cold and winds continued, only ending on the 26th with a final fall of snow three inches in depth. The wind, mostly from the North, retarded migration and all the visiting bird life was very noticeably delayed in arriving at their usual haunts.

Perhaps it was the pressure of this bad weather which caused a large flock of Waxwings to honour us with a visit on March 13th, as on that date they were first observed by Colonel Bell, M.O., near the R.E. hut on Strensall Common. Daily visits by Mr. Zimmermann enabled the numbers to be checked, and a flock of 18 was counted on the 14th, and the following day, the 15th, 26 were seen ; they were very confiding and allowed a very close approach. On March 20th, Colonel Bell reported that the numbers had increased and on viewing the flock Mr. Zimmermann estimated there was quite 200 Waxwings busily stripping the last remaining hawthorn berries from the tall bushes ; the flock was extremely active and presented an extraordinary sight to bird lovers. The locality was visited on the 23rd and again on the 26th, but the Waxwings had departed, probably passing on because they had exhausted the meagre supply of haws, of which they seem to be very fond. I saw a party of 15 Waxwings at Strensall on March 14th, and these no doubt belonged to the main flock observed by Colonel Bell. During the period of the visit the weather was very wet, particularly on the 18th and 19th, and there was much flooding.

Curlews have again nested in the vicinity of York. Four pairs hatched 15 young ones and eight pairs successfully bred in their usual haunt on Strensall Common ; the number of young reared is, however, uncertain. Generally there are some Redshanks with the Curlews, but this year only one pair is recorded.

Carrion Crows have decreased in numbers, and the Hooded Crow has disappeared altogether, not one being seen.

Magpies and Jays are again numerous as also Barn Owls, Tawny Owls, and Long-eared Owls. There are fewer reports of Little Owls, no doubt due to the keepers' war upon this species.

Mallard and Teal Duck have been plentiful both at Strensall and Skipwith, and a pair of Pochards nested at the latter place, and another pair in one of the city parks. On March 20th five Whooper Swans flew over Heslington and settled on the Tillmire, and it may be one of these birds that took up residence in the Tang Hall Park and is still there. It is possible the 'herd' came from Harewood or Roundhay.

Great-crested Grebes at Castle Howard on March 21st consisted of two pairs and one odd bird. Mr. Taylor thinks none bred there this year. Another pair were seen at Strensall, but do not appear to have nested. Little Grebes were observed in their usual local haunts and do not merit more detail.

Kingfishers maintain their numbers and I often see one and sometimes two plunging into the old brick pond in my garden to secure the sticklebacks which are so plentiful.

Sandpipers have nested beside the River Rye, but are noticed around York usually as they pass along the waterway in the spring and again in the autumn on migration, and on occasions I get one in my garden, just to break its journey perchance. In like manner some Sand Martins, House Martins, Swallows, and Swifts, none of them so common this year, one wonders why there is this gradual decline when Cuckoos are so numerous and the same conditions of weather and food supplies apply to all.

Again I wonder what of the Landrail or Corncrake, a species that has almost disappeared in this area. I have not heard one myself this year though I am about the countryside daily. All the blame does not lie upon the close cutting grass mowers as there is still cornfield and rough pastures as harbourage.

Also, what of the Nightjar once so plentiful here in early summer? A few years ago they bred freely at Sand Hutton, Sandburn, Strensall, Skipwith, and other well-known localities, and many times I have watched six 'Fern Owls' on the wing together hawking moths in the late dusk of June evenings. The old haunts remain, and in part, the old conditions, but the Nightjars are not seen, neither is their musical 'churring' heard.

With the passing of the Bird-catcher there is a marked increase in the numbers of many species once their prey. Larks are plentiful as also Twites, Linnets, and Redpolls. Chaffinches are everywhere, one pair nested in the top of a haystack. Blackbirds and Thrushes are so common as to provide several records of being double brooded. At Huntington three pairs of Goldfinches nested quite near together, one pair choosing a tree overhanging the village pond, all were successful in rearing young.

Ring Doves, or Wood Pigeons, nest freely around York, but not the Stock Dove, hence the report of four nests of the rarer species all in old nests of Magpies, is of interest. Turtle Doves have increased of late years, but being summer visitors only are always uncertain, one pair had a nest at Sand Hutton.

The Green Woodpecker is not so common as in previous years, its relative, the Great-spotted Woodpecker, has, however, nested freely around York. The rarer Lesser-spotted Woodpecker has not been observed, although it has bred in previous years.

A pair of White Wagtails and four young ones were seen at Huntington on July 11th, and they remained there for about three weeks. Pied Wagtails have been quite common and are well-established residents. Yellow Wagtails are much rarer summer visitors and few were seen.

House Martins were still feeding young at Bolton Percy on September 11th.

I am greatly indebted to Messrs. V. G. F. Zimmermann, Fred Vear, W. G. Bramley, and E. Wilfred Taylor for many useful notes.

ARRIVAL AND DEPARTURE OF MIGRANT SPECIES, 1937

WHEATEAR	...	...	Heslington, two seen on March 19th; others seen at Bolton Percy on April 29th and York, April 19th.
WILLOW WARBLER	...	...	York, April 6th; Bolton Percy, April 10th; Huntington, April 18th.
SAND-MARTIN	...	...	Stamford Bridge, April 7th; Huntington and Newton-on-Ouse, April 11th; Main flocks at Stamford Bridge, April 27th.
SWALLOW	...	...	Elvington (2), April 10th; Huntington, April 12th; Numbers at York, April 26th. Last seen in York, October 6th.
WHITETHROAT	...	...	Huntington, April 11th; Bolton Percy, May 4th; York, April 16th; Green Hammerton, May 3rd.
HOUSE MARTIN	...	...	New Earswick, April 17th. Last seen in York, October 6th.
FIELDFARE	...	...	A flock of 50 at Bolton Percy on outward migration, April 25th.
CUCKOO...	...	...	Bolton Percy, April 27th; Strensall, April 28th; Stamford Bridge, April 29th; One in my garden at York on August 4th, no doubt a bird of the year.

YELLOW WAGTAIL	...	Bolton Percy, April 29th.
TURTLE DOVE...	...	Ampleforth, May 2nd ; Bolton Percy, May 28th.
CHIFF-CHAFF	...	Kilburn, May 2nd.
SEDGE WARBLER	...	York, May 3rd.
SWIFT	...	Huntington and Sheriff Hutton, May 5th ; Heworth (York), May 13th ; Bolton Percy, May 23rd. Last seen at Huntington, August 12th.
BLACKCAP WARBLER	...	Castle Howard, May 9th.
REED WARBLER	...	Castle Howard, May 9th.
SAND-PIPER	...	Rievaulx, River Rye, May 9th ; two at Bishopthorpe, River Ouse, July 26th, and one at York, August 12th, outward migration.
GARDEN WARBLER	...	Huntington, May 10th.
LANDRAIL	...	Clifton Ings, York, May 15th ; Acomb, York, May 15th ; Grimston Bar, May 23rd. One heard at Bolton Percy, June 23rd, and another at Nun Appleton on July 11th.
NIGHTJAR	...	One pair at Strensall, May 16th. The only Nightjars observed this year.
SPOTTED-FLYCATCHER		Huntington, May 17th. Many more seen after this date.

North Riding (W. J. Clarke) :—A noticeable feature of the bird life of this part of Yorkshire in recent years has been the great decrease in the numbers of Hooded Crows. Very few have been reported during 1937. One was seen at Seamer on March 3rd, and two on April 3rd. The species has also been seen in the Whitby district.

The Hawfinch holds its own and has been increasing lately in the Whitby area. The White Sparrow, which has lived about the recorder's garden for the past 2½ years disappeared after June 6th, when it was seen obviously ill.

A few Bramblings were seen at Whitby during December, 1936. A number of Mealey Redpoles arrived early in September in the Whitby area and fed on the seeds of the Rose Bay Willow herb. They stayed for about ten days. Bullfinches and Goldfinches show an increase in numbers during the year.

Grey Wagtails bred and reared young at Forge Valley and Hackness. A single Yellow Wagtail was seen at Whitby on May 17th.

A solitary Nuthatch has lived in the vicinity of Sleights for more than three years, but does not find a mate.

Considerable numbers of Waxwings were seen about Whitby during March, and some remained until the end of April. None were seen during the winter. A single male specimen was seen in Peasholm Glen, Scarborough, on April 3rd, feeding on hips.

The numbers of Spotted Flycatchers seen both at Scarborough and Whitby show a considerable increase over the preceding year.

A Grasshopper Warbler was heard singing at Ravenscar during June. Reed Warblers were again at the Scarborough Mere during the summer.

Redwings and Fieldfares were scarce during the winter all over the district.

A fine adult male Red-spotted Blue-throated Warbler was caught alive at Whitby on May 13th. Attempts made to keep it alive failed, and it has been preserved for the Whitby Museum.

A Black Redstart was seen at Whitby in January.

A Song Thrush patched up the previous year's nest of a Blackbird at Scarborough and laid four eggs in it in April. Stonechats have shown a considerable increase in numbers over the whole of the district where suitable nesting conditions are to be found. Whinchats on the other

hand have almost left the Scarborough area and are reported as very scarce at Whitby.

Dippers nested in most of the usual places during the past year, and appear to keep up their numbers. House Martins varied in numbers in different parts of the district. On the whole their numbers showed a slight decrease, but one or two villages showed a good number of birds.

A single Lesser-spotted Woodpecker was seen several times about Egton Bridge by Mr. A. S. Frank. Kingfishers nested as usual on the Derwent and reared young.

Barn Owls are reported as nesting freely in the Whitby district, but have not been seen around Scarborough. Brown Owls continue very common. A Little Owl was seen at Kirbymoorside on July 31st.

A pair of Montagu's Harriers nested and reared five young ones on the North Riding Moors. Two immature birds, probably belonging to this brood, were seen on the wing on September 15th by Mr. A. S. Frank.

A pair of Gannets nested at Bempton Cliffs and laid an egg, which was taken.

Many Grey Geese, up to 180 birds at a time, passed Scarborough during the October migration. All were heading south.

A pair of Pintails were seen on the Scarborough Mere on January 25th. On that date there were also 18 Pochards on the water and many Mallards. Five Scaup Ducks were shot at Scalby Beck during the first week in February. Many Tufted Ducks visited the Scarborough Mere, and even the Fishpond in the town and remained until April 13th. An adult drake appeared on the Fishpond on October 4th, but was gone on the 8th. Four Common Scoters were seen at Scarborough on February 11th.

An adult Bittern was picked up in the Scarborough Cemetery, with a disabled wing, on December 20th, 1936. The bird was placed on an island in the Mere and supplied with food, after a few days rest it flew away.

Woodcock nested freely about Whitby and some also nested at Scarborough.

A considerable migration of Great Black-backed Gulls took place along the coast on October 4th and 5th. The birds were nearly all fully adult specimens.

A first year's Glaucous Gull spent some time about Scarborough harbour between December 24th, 1936, to January 2nd, 1937. Another was seen in Whitby harbour from November 8th, 1936, to February 26th, 1937.

An immature Little Gull stayed about the harbour at Scarborough from January 2nd to January 6th. One was at Whitby from February 1st to April 11th.

Fulmar Petrels arrived at the Scarborough Castle cliff in the last week in December, 1936. On December 28th five were present; by December 31st the number had increased to 20. The numbers inhabiting the cliff during the summer was about the same as last year, but a considerable increase in numbers was noted at Whitby.

A Black-throated Diver visited the Scarborough Mere on February 9th, and stayed till the 11th.

During February many Great-crested, Red-necked, and Slavonian Grebes made their appearance. A Great-crested Grebe frequented the Scarborough Mere from February 1st to 9th. Great-crested Grebes were seen at Whitby on February 3rd, 7th, and 8th, and on the Scarborough Mere on February 11th. Slavonian Grebes were noted in Scarborough harbour February 4th to 7th, three on Scarborough Mere February 5th, two at the same place on February 11th, and one on February 9th and 16th. Red-necked Grebes were seen at Scarborough Mere February 4th to 9th, when two birds were there. Two more, or perhaps the same, were there on February 11th. One was in the harbour at Scarborough February 20th to 23rd. Many Red-necked Grebes were seen at Whitby

between December 19th, 1936, and March 20th, 1937. One on February 3rd was acquiring the red throat.

Corncrakes continue very scarce, and a bird calling at Throxenby on May 23rd is the only record for the Scarborough area. Very few have been noted at Whitby.

Three Red-legged Partridges were seen to fall into the sea two miles from land, were rescued by a fishing boat, dried, and released on May 12th.

Disease has appeared this year among the Red Grouse and the higher moors have suffered severely, causing a considerable loss of birds. The recorder is indebted to Messrs. A. S. Frank, T. N. Roberts, and F. Snowden for information used in this report.

WILD BIRDS AND EGGS PROTECTION COMMITTEE

List of Subscriptions, Season 1937

	£	s.	d.		£	s.	d.
Mr. Alan Ward ...	5	5	0	Mr. T. Sheppard ...	0	10	0
Ald. A. Hirst ...	5	0	0	Miss K. P. Yeoman ...	0	10	0
Mr. H. B. Booth (1936				Major Evans ...	0	10	0
and 1937) ...	2	2	0	Mrs. Binns ...	0	10	0
Mr. W. MacMillan ...	2	0	0	Mr. W. Birch ...	0	10	0
Major R. Cattley ...	1	1	0	Miss C. Edmondson ...	0	10	0
Mr. J. Atkinson ...	1	1	0	Mr. J. R. Artley ...	0	10	0
Mr. T. Waddington ...	1	1	0	Mr. V. G. F. Zimmermann	0	10	0
York Field Nat. Society	1	0	0	Mr. B. Linney ...	0	7	6
Major J. W. Dent ...	1	0	0	Sir Harry Smith ...	1	0	0
Mr. W. W. Nicholas ...	1	0	0	Miss A. Mason ...	0	5	0
Mr. L. Brigg ...	1	0	0	Mr. T. N. Roberts ...	0	5	0
Mr. F. H. Edmondson	1	0	0	Mr. O. Gibbs ...	0	5	0
Miss S. Waterhouse ...	1	0	0	Scarborough Field Nat.			
Mr. R. H. Edmondson	1	0	0	Society ...	0	5	0
Mr. E. B. Gibson ...	0	10	6	Mrs. A. Stell ...	0	5	0
Mr. C. W. Mason ...	0	10	6	Mr. A. W. Bradbury ...	0	5	0
The Misses Samman ...	0	10	6	Mr. W. Greaves ...	0	5	0
Mr. T. Petch ...	0	10	6	Mr. T. Stainforth ...	0	5	0
Mr. R. Chislett ...	0	10	6	Mr. W. F. Fearnley ...	0	5	0
Mr. H. J. Behrens ...	0	10	6	Mr. W. E. L. Wattam ...	0	5	0
Mr. C. F. Procter ...	0	10	6	Rev. W. L. Schroeder	0	5	0
Mr. J. Hanson ...	0	10	6	Mr. A. E. Greaves ...	0	2	6
Mr. W. J. Clarke ...	0	10	0	Mr. J. E. Clarke ...	0	2	6
Mr. S. H. Smith ...	0	10	0	Mr. L. Munro Clark ...	0	2	6
Mr. E. W. Taylor ...	0	10	0	Miss A. Cherry ...	0	2	6
Mr. A. A. Pearson ...	0	10	0	Mr. T. H. Dick ...	0	2	6
Mr. H. Hodgson ...	0	10	0	Mr. J. H. Lumb ...	0	2	6
Mr. J. J. Brigg ...	0	10	0	Mrs. Robson ...	0	2	6
Mr. W. Bamford ...	0	10	0				
Mr. K. N. Hillas ...	0	10	0				
					£41	14	0

Preliminary Balance Sheet

INCOME.	£	s.	d.	EXPENDITURE.	£	s.	d.
Subscriptions as per list	41	14	0	Watchers and Insurance	21	2	6
Balance from last year	47	13	0	Printing and stationery	0	19	0
				Postages ...	1	5	2
				Reward <i>re</i> Gannet's egg	0	10	0
					23	16	8
				Balance in hand ...	65	10	4
	£89	7	0		£89	7	0

Wild Birds and Eggs Protection Committee. Report for Season 1937 (C. W. Mason) :—Mallard have been unusually plentiful in January and February on land in flooded areas. A Shag was picked up at Cottingham on February 14th. A Sand Martin was noticed on April 24th. There have been several reports of Bullfinches at points where they have been absent and unrecorded for many years, and there is a decided increase in bird reports generally. Whether this is a result of an actual increase in the birds this year or an interest in the general interest and desire to report, may be debated, but our own opinion is that uncommon birds are becoming more plentiful. The first Swift was recorded on May 8th. The Corncrake is still very scarce and there are only about four records. The Oyster-catcher nested at Spurn and was observed with young on June 19th. It is estimated that there are 200 pairs of Fulmar now at Bempton, this bird made its first appearance in 1921. A Whinchat was observed in Cold Harbour Lane on July 28th. Partridges were scarce and patchy.

Spurn.—This season has been the best in the history of our preservation. The increased attention given to this sanctuary by visitors of recent years has split up the two previously existing colonies, and a new colony has been formed on the south-east. This is out of range of interference and the birds are nursing the site accordingly. There is still a colony at the Beacon and on the eastward side of the headland south of Kilnsea.

Results were as follows :—

28 Ring Plovers' nests, 105 eggs ; 65 Lesser Terns' nests, 151 eggs ; 1 Oyster-catchers' nest, 3 eggs.

Arrivals : April 20th, Swallows ; April 28th, first Ring Plover nested, this ultimately held 5 eggs ; April 30th, Terns arrived ; May 23rd, first Tern nested.

Hornsea Mere.—Heron, 18 nests counted, but probably four more. Ducks were not so numerous as in 1936, but there was the usual variety. The general volume of bird life was notably less.

Great-crested Grebes, 14 pairs, only two nests were seen on July 1st. Only four young have been observed, the lowest record for many years.

70 Swans. The first hatched five cygnets on June 10th, the second three on June 19th. A third nest on the south came out on July 14th with six cygnets.

Three pairs of Kingfishers hatched out, five and four, whilst the third were unknown.

A Mallard hatched out eight in the boat-house.

A lot of nests were wasted on May 20th, Ducks, Pheasants, and other ground nesters.

A Blue Tit nested in a thermos flask and a Wagtail in a letter-box.

Bullfinch and Grasshopper Warbler were both noted.

A Peregrine Falcon and a Corncrake were noted on May 20th.

Bempton.—An interesting thing is undoubtedly the nesting of the Gannet, and an egg was taken from the cliff on June 11th. Steps have been taken and will be confirmed to secure immunity from interference, if possible, for the future. Herring Gulls and Kittiwakes are increasing out of all useful proportion. Gullimots are steadily diminishing, and the Fulmar Petrel is now well established.

CONCHOLOGICAL SECTION

Conchology (Mrs. E. M. Morehouse) :—It is pleasing to the conchologist to see land mollusca recovering from the years of drought. While there have been no outstanding records, *Helix nemoralis* Linné are to be seen in moderate numbers in some of their old habitats, it is quite noticeable how many immature specimens there are. A new colony has made its appearance this year as you enter the Sprotborough Woods,

near Doncaster, by the cottages. Here the dominant form is the variety *rubella* Moq.-Tan.

Mr. J. Digby Firth showed some *Helix nemoralis* Linné and its varieties from his garden at Lawnswood at a meeting during the summer. Here the interest was, that although some houses had been built 15 years, the species still persist in his and other gardens around. *Helicella caperata* Montagu has gradually spread in the last few years ; it appears to be more evenly and widely distributed and if there is any limestone about, especially old quarries, one is almost sure to find it. At Cridling Stubbs after rain on September 15th there were hundreds, some rather dark ones.

Azeca tridens Pulteney occurred at Keld in a very small area.

Hygromia fusca Montagu is a new record for V.C. 65.

It is with some regret the following note is written : *Vivipara contecta* Millet, after much careful dredging in the drain between Blaxton and Park Drain, the net result of two people one afternoon only yielded one dead immature specimen and one alive, evidently this year's brood. In the same water there was no evidence of *Pisidium amnicum* Müller (10 years ago and later there were plenty). This may be due to two facts—over-cleanliness of those cleaning out the drain, and ducks belonging to a nearby-farm. By the waterside *Zonitoides nitidus* is well established, also *Cochlicopa lubrica* Müller and *Euconulus fulvus* Müller were found under wood among the vegetation on the bank. *Succinea putris* is still to be found, but only sparingly.

Among the notes sent in by Mr. and Mrs. Thurgood is one dated February 14th, King Lane Pond, 'Found two *Limnaea stagnalis* Linné alive and feeding.' King Lane Pond is the home of the sinistral *L. pereger* Müller, which provided the material for the research work done on them by Dr. A. E. Boycott and Mrs. Alastair Hardy (née Sylvia Garstang). In recent years the sinistral form has been very rare there and I understand a pair of Mallards bred and lived there last year, no doubt to the detriment of the molluscan fauna.

Huddersfield Canal on May 1st yielded a vast number of *Planorbis contortus* Linné, while *P. fontanus* Lightfoot and *P. albus* Müller were the best captures.

September 4th, the joint Y.N.U. and Y.C.S. Meeting to Braham Cross Roads yielded 11 species and 8 varieties. This was exceedingly good as the day was very dry and rain had not fallen for some time. Much praise is due to the enthusiastic searchers.

BIOLOGY SECTION

Fresh-water Biology Committee (J. M. Brown) : The work of this Committee has continued on the lines of the previous year. Members of the Committee were present at all the general field meetings of the Union, and at the special meeting held at Keld there was a very fair attendance. Reports concerning two of these meetings have appeared in *The Naturalist*, and especially at the Keld meeting interesting results were obtained. A further report on the distribution of a rare May-fly and its nymph has also been published in *The Naturalist*.

Considerable progress has been made in our knowledge of the distribution of fresh-water types in the county, and several additions to the known fauna have come to hand.

In a Committee such as this, much depends on the work of individual members, and the recorder would welcome any information members can supply of their doings.

A paper on the distribution of Trichoptera (Caddis-flies) in the county is in preparation.

Distribution of the Crayfish (*Astacus pallipes*) (S. H. Smith) :

I am indebted to Inspector R. W. Ward of the Yorkshire Fishery Board, for kindly sending me the following notes :—

RIVER YORE AND TRIBUTARIES.—Good numbers were seen in the upper

reaches of the River Yore and small tributaries in Upper Wensleydale. Heavy winter floods washed hundreds out on to the fields at Askrigg, and when the water fell, gulls fed ravenously on them before they could get back to the river. Crayfish were plentiful in the Copgrove or Robert Beck.

RIVER SWALE AND TRIBUTARIES.—No report from the main river, but some reports of Crayfish in the Cod Beck.

RIVER AIRE AND TRIBUTARIES.—Crayfish have been seen in the upper reaches of the River Aire and Otterburn Beck.

RIVER WHARFE AND TRIBUTARIES.—They are reported as being seen in the Bolton Abbey and Burnsall districts.

RIVER NIDD.—No report.

LEEDS AND LIVERPOOL CANAL.—Crayfish were seen round Skipton and Silsden.

RIVER DERWENT.—None seen or reported this year.

RIVER RYE.—There is no trace of Crayfish that have been introduced here.

ENTOMOLOGICAL SECION

Hemiptera (J. M. Brown) : The past season seems to me to have been rather better than some we have recently experienced ; Hemiptera became fairly plentiful, and some of the less common species not seen recently have this year been noted, as for example, *Pycnopterna striata* and *Calocoris ochromelas*, both of which occurred near Sheffield, and *C. alpestris* taken at Hutton-le-Hole. Considerable collections have been made by the recorder around Sheffield and at Robin Hood's Bay, and a successful two days were spent at the Doncaster Meeting in August (and reported on in *The Naturalist*, 1937, pp. 262-264).

Four species can be noted as new to the County list :—

† *Aphelocheirus montandoni* Horv. Taken in the River Derwent at Malton, by Rev. E. J. Pearce, 21/6/37 (*The Naturalist*, 1937, p. 212). V.C. 61.

† *Orthocephalus saltator* Hahn. Taken at Smeaton, 31/6/37, and at Sprotborough, 2/7/37. V.C. 63.

† *Delphax (Araeopus) pulchella* Curt. From Sprotborough, 2/7/37. V.C. 63.

† *Syromastes marginatus* L. From Cloughton, G.B.W. (*The Naturalist*, 1937, p. 267).

In addition a number new to the different Vice Counties have been taken. Among the more interesting species obtained during the season may be mentioned :—

Elasmostethus interstinctus L. which again occurred in Ecclesall Woods (Sheffield), 18/2/37, and in July and August on Oak. It is also common in V.C. 62, and was taken at Hutton-le-Hole by G. B. Walsh, 5/6/37.

Coreus (Enoplops) scapha F. On the cliffs, Robin Hood's Bay, 14/10/37.

Empicoris culiciformis DeG. Whitby, -/1/37, H. Britten.

Megaloceraea linearis Fuess. Sprotborough, 2/8/37. Now known from V.C. 61 and 63. V.C. 63.*

Calocoris alpestris Mey. Nymphs, Hutton-le-Hole, 5/6/37, G.B.W.

C. ochromelas Gmel. Ecclesall Woods (Sheffield), 28/6/37. V.C. 63.*

Heterotoma meriopterum Scop. Smeaton, 31/7/37. V.C. 63.*

Megalocoleus pilosus Schr. Plentiful on Tansy, Sprotborough, 2/7/37. V.C. 63.*

Macrotylus solitarius Mey. Sprotborough, 2/8/37. V.C. 63.*

Psallus salicellus Mey. Sprotborough, 2/8/37. V.C. 63.*

Cicadella viridis L. Loversall Carr, 2/8/37, E. G. Bayford (*The Naturalist*, 1937, p. 252).

* New to the Vice-County.

† Species new to the County.

Macropsis virescens Fab. Smeaton, 31/7/37. Common on Willows by the River Went.

Edwardsiana plebeja Edw. Sprotborough, 2/8/37. Plentiful on Elm.

Typhlocyba nitidula Fab. Sprotborough, 2/8/37. On Elm. V.C. 63.*

Delphacodes discreta Edw. Smeaton, 31/7/37. V.C. 63.*

D. fairmairei Perr. Sprotborough, 2/8/37. V.C. 63.*

Aphalara calthae L. Ecclesall Woods, 29/3/37, and 4/11/37. V.C. 63.*

Piezostethus cursitans Fall. and *Tingis ampliata* Fleb. From Helmsley, G.B.W. (*The Naturalist*, 1937, p. 267).

Neuroptera (J. M. Brown) : A paper on 'The Mecoptera, Neuroptera and Megaloptera of Yorkshire' appeared in *The Naturalist*, 1937, pp. 79-87, and gave the distribution of these insects in the county up to date. Since publishing this list, I have been able to add another species of Brown Lacewing to the county fauna, viz. †*Hemerobius pini* Steph. taken in the woods at Wyming Brook (Sheffield), 25/8/37 (*The Naturalist*, 1937, p. 254).

Other interesting species taken include :—

Osmylus fulvicephalus Scop. Again occurred in Ecclesall Woods, 10/6/37, where it seems well established.

Conwentzia psociformis Curt. Taken at several places near Robin Hood's Bay, July, 1937.

Hemerobius atrifrons McL. Occurred plentifully on Larch and Scots Fir, in Ecclesall Woods and Wyming Brook, Sheffield, during August.

Chrysopa carnea Steph. Was again taken by H. Britten, at Whitby, 4/4/37, and by myself at Robin Hood's Bay, 14/10/37. It seems to be fairly plentiful in this part of the county, but scarce elsewhere. Both these specimens were taken within doors.

C. ventralis Curt. Another species scarce with us, taken at Robin Hood's Bay, 2/7/37 and 4/7/37.

Nathanica capitata Fabr. A species not common in Yorkshire, taken at Ravenscar, 23/6/37.

Psocoptera (J. M. Brown) : Several species of this order were exceptionally plentiful during September and early October, such as *Graphopsocus cruciatus* L., *Caecilius flavidus* Steph. and *Stenopsocus immaculatus* Steph. Wingless females of *Reuterella helvimacula* End. were fairly plentiful under their webs on Sycamore and other trees in Ecclesall Woods during early October.

Ectopsocus briggsi McL. Has proved to be widely distributed in the Robin Hood's Bay district during September and October.

Metylophorus nebulosus Steph. Occurred in Mulgrave Woods, 25/8/37, H. Britten.

Aimphigerontia contaminata Steph. Was plentiful on trunks at Wyming Brook, 3/9/37.

In addition to these records, four species which I have taken this year can be added to the county list :—

†*Peripsocus alboguttatus* Dalb. Was taken in numbers on Larch and Scots Fir, Wyming Brook, 25/8/37 (*The Naturalist*, 1937, p. 254).

†*Elipsocus consimilis* McL. Occurred in the same wood, 11/8/37.

†*Caecilius fuscipennis* Latr. and †*Stenopsocus stigmaticus* Imh. and Lebr.

Were taken in the Robin Hood's Bay district during October, 1937.

Plecoptera (J. M. Brown) : No additions to the county fauna can be made, but several of the less common species have occurred in fresh localities.

Leuctra moselyi Mort. Was taken by H. Whitehead, at Blubberhouses, 10/7/37.

Perlodes mortoni Klap. Was sent to me by H. Britten, from Little

* New to the Vice-County.

† Species new to the county.

Beck, 16/5/37 (where it was taken at the Union's Excursion to Robin Hood's Bay, 15/4/33). It was also taken at Keld, 15/5/37. *Taeniopteryx risi* Mort. Also at Little Beck, 16/5/37, by H. Britten, and by the recorder at Robin Hood's Bay, 1/7/37.

Amphinemura standfussi Ris. Was found to be quite plentiful about various streams at Robin Hood's Bay during June, and a single specimen was received from H. Britten from Hole of Horcum, 25/7/37.

Capnia nigra Pict. Our earliest species was again obtained in Ecclesall Woods, 25/1/37.

Orthoptera (J. M. Brown) : There is very little to report regarding this neglected order. Mr. E. G. Bayford writes that *Periplaneta australasiae* Fab. appears to be well established in one of the green-houses in Locke Park (Barnsley). On July 19th several specimens were brought to me in the pitcher of a pitcher plant. They were either poisoned or drugged by the fluid in the pitcher. If the latter, they succumbed, for although I kept them some days they did not recover. I have known of their presence here for a number of years, so there is nothing novel in the record.

A few common species of the Acrididae I have taken in unrecorded localities and may be noted :—

Myrmeleotettix (*Gomphocerus*) *maculata* Thunb. and *Omocestus viridulus* L. were taken near Stapleton Woods, 31/7/37, and *Chorthippus bicolor* Charp. occurred on the cliffs at Robin Hood's Bay as late as 14/10/37.

Ephemeroptera (J. R. Dibb) : We noted in 1936 that the May-flies had appeared in under-average numbers. From the reports of appearances and captures during 1937, the year seems to be more normal for Ephemeroptera. A very acceptable report upon Entomology at Robin Hood's Bay and Sandsend was contributed to *The Naturalist* by Mr. J. M. Brown, and appeared in April. This report included eight species of May-flies noted in 1936.

The same author reported the occurrence of six genera of May-fly nymphs in the streams at Keld on the Union's Excursion in May this year (*The Naturalist*, 1937, p. 162).

It is of particular interest to note that Mr. Brown has this year added three more stations in Yorkshire for the little known *Ameletus inopinatus* Etn. He records a male subimago and nymphs from Selside V.C. 64), 19/5/37, and nymphs from Buttertubs Pass (V.C. 65), 18/5/37, and Keld (V.C. 65), 15/5/37. It will be remembered that in 1931 the same recorder introduced the species to the Yorkshire list. Based upon his systematic investigations which are being so well rewarded, Mr. Brown has stated that he thinks the species will prove to be less rare and more widely distributed in this country than we at present imagine (*The Naturalist*, 1937, pp. 162, 217-8).

Mr. John Wood has supplied a useful collection of local species which has provided numerous entries on the all-too-scanty record cards, and we would mention the inclusion of *Leptophlebia marginata* L. which he took at Keighley in May.

Mr. W. D. Hincks has sent me a note of his captures together with the specimens, which include *Habrophlebia fusca* Curt. from Bramham, in July, and one male example of *Ecdyonurus longicauda* Steph. The latter species came from Keighley in September, and is closely related to the common *E. venosus* Fab. which is abundant in this county in the early months of the year. *E. longicauda* replaces *venosus* in the autumn.

My own records call for no special comment and represent captures from the Leeds district and from Scarborough.

Coleoptera (W. J. Fordham) : The year 1937 has not been a good one for beetles in Yorkshire, still a few species have been added to the county list, and a fair number to the various Vice-County lists. Beetles

were taken on the following excursions of the Yorkshire Naturalists' Union : Keld, 9 species ; Hutton-le-Hole, 66 species ; Bubwith, 24 species ; and Doncaster district, 82 species.

A new *Philonthus* to the British list, *jurgans* Tott. was described in the *Entomologist's Monthly Magazine* by the Rev. C. E. Tottenham, from East Ardsley and Skipwith, among other places, and Mr. Hincks has taken it in his garden at Leeds, in decaying grass-heaps along with the recently added *P. rectangulus* Sharp.

Mr. Hincks adds to the Yorkshire list a specimen of *Pityophthorus pubescens* Marsh. from Skipwith, by sweeping.

Mr. Walsh adds *Hylecoetus dermestoides* L. and *Haplocnemus impressus* Marsh. from Pine at Newgate Bank, Helmsley.

Mr. H. Britten adds *Quedius xanthopus* Er. from Mulgrave Woods, and *Oligota atomaria* Er. from amongst bedding in a cowshed at Saltersgate.

Mr. R. R. U. Kaufmann records in the *Entomologist's Monthly Magazine* a specimen of *Gnathonus punctulatus* Th. from a carrion trap, which is new to the county.

A full list will be published later in *The Naturalist*.

Diptera (Chris. A. Cheetham) : 1937 has not been a good year for the collector of Diptera, but some interesting species have been taken on our out-door meetings and these have been recorded in *The Naturalist*. In last year's report, the occurrence in very unusual numbers of the Tachinid, *Oliveria lateralis* F. and the Syrphid, *Syrphus balteatus* Deg. was specially mentioned, this year, however, the two species have only been seen occasionally and in normal or even fewer numbers. Two welcome papers have appeared in *The Naturalist* on Diptera, the first being a list of captures made in the Pocklington area by Mr. H. Audcent (*The Naturalist*, 1937, pp. 150-151), and the other, Dr. F. W. Edwards' paper on the Craneflies in Mulgrave Woods (*The Naturalist*, 1937, pp. 253-254). In these papers there are many additions to the Yorkshire list. Amongst the flies caught on our outings were *Tipula macrocera* Zett. on Great Shunner Fell at the Keld meeting ; *Platypareia discoidea* F. at Hutton-le-Hole ; *Leptogaster cylindrica* de G. and *Machimus atricapillus* Fln. on Smeaton Leys, and *Xylota sylvarum* L., Smeaton Craggs, all at the Doncaster meeting. At the Bubwith meeting the Dolichopod *Porphyrops micans* Mg. was added to our list.

On a visit to the Sedburgh district I caught *Limnophila meridiana* Staeg. (see *The Naturalist*, 1937, p. 244) ; and on a visit to the Hole of Horcum, September 1st, I caught *Diastata nebulosa* Fln. ; and on Lawkland Moss, June 22nd, *Hemerodromia unilineata* Zett. ; these last two have not been recorded previously.

Hymenoptera Aculeata (Rosse Butterfield) : Mr. H. Britten, F.R.H.S., is to be congratulated on continuing his investigations, with fruitful results, in the Whitby district, where additions have been made to the county or vice-county lists, and particulars are to be published in *The Naturalist*. He found queens and workers of the interesting tiny ant *Formicoxenus nitidulus* Nyl. in a nest of *Formica pratensis* Retz., this latter being new to the county. A female *Mutilla europaea* was brought to him alive from Glaisdale in August.

Mr. G. B. Walsh reports *Monomorium pharaonis* from a warehouse in Scarborough.

Records of Aculeate Hymenoptera would be welcome from South Yorkshire.

Lepidoptera (Rosse Butterfield) : Apparently there has been no marked influx of immigrant butterflies and moths this year. In summer moderate numbers of large white butterflies appeared rather suddenly, and the evidence of their visitation was seen in the shape of larvæ on cabbages, etc. In spite of the dry and apparently favourable autumn months very few 'red admiral' or 'painted lady' butterflies were seen far inland, and then not until September in Mid Airdale. The

former was seen consistently—just odd ones, the latter on two or three occasions. Mr. C. A. Cheetham's experience roughly coincides. He observed a few peacock butterflies at Austwick. Nor do the immigrant hawk moths seem to have been in evidence.

A special feature in June was the abundance of webs of the small ermine moth and these were widely spread in the wooded valleys at fairly high elevation, where normally they are not often seen. The effect of the larvæ of the antler moth was seen in a few places on the hills. Ragwort bloomed freely in August, and proved attractive to species of Noctuidæ. The Rev. F. G. Britton states that the season has been good in Upper Wharfedale. During his visits he has not seen *Erebia aethiops*, nor has it been seen for over a decade. I myself have paid visits annually at about the time it is due. It seems to have gone—temporarily at least from Upper Wharfedale, where formerly it was not uncommon, particularly in one area. The day-flying Pyrale, *O. octomaculata*, once very familiar is now very uncommon; on the other hand some species in the valley have increased and spread. *Thecla rubi* for instance, and the small pearl-bordered fritillary, which Mr. Cheetham reports from Austwick and Lawkland Mosses. The drastic felling of Beech trees in Grass Wood will probably affect the status of *Demas coryli*.

Mention should be made of the occurrence of *Pararge egeria* at Stapleton Park, near Doncaster, reported in *The Naturalist*, October last, p. 261.

In Mid Airedale the small copper butterfly is familiar in some places. In an interleaved copy of the Union's *Entomological Transactions, Yorkshire Lepidoptera*, 1883, E. P. Butterfield has a note opposite the species indicating that he had not seen it in the district (Wilsden) until 1918. Changes in the fauna thus tend to take place.

Moths were attracted to light more than usual in September.

Mr. E. G. Bayford in reply to my enquiry for information on Lepidoptera says: In Lepidoptera I had a larva of *Acronycta megacephala* which I noticed on a Lombardy poplar in my garden on July 26th and 27th. It is curious that last year a larva of *A. alni* was found in my garden. It was on the ground, so that I cannot say on what it had been feeding. The nearest trees to the place where it was found were laburnums and Wild Cherry.

BOTANICAL SECTION

(Chris. A. Cheetham): The Botanical Section has been well represented on the excursions of the Union this year, and the results of their investigations have been recorded in reports of these meetings in *The Naturalist*.

It is evident that this section of our Union has kept well to the fore and we hope the publication which we have undertaken of an up-to-date list of known Yorkshire plants and their habitats will help workers by showing them which species or areas have been neglected.

Once again correspondents have been very helpful to your Secretary in drawing up this report and he is grateful for this help.

Botanically, 1937 has been very like 1936, both being normal years with few outstanding displays of flowers or fruits to invite attention, one feature that became evident in the discussion at the Annual Meeting of the section was the paucity of fruit on the Sycamore this year, this shortage appeared to be seriously disturbing the teaching profession for their class work. The Sycamore is a tree which appears in our records as most regular in its fruiting, and the shortage this season is widespread in our area.

After a spell of frosty weather at the beginning of December it was mild and wet until the end of February, this helped vegetation along, and the Purple Saxifrage was in flower on Penyghent on February 24th, and at this date Celandine and Coltsfoot were in flower in this district,

but the heavy snowfall at the end of the month and the frosts of March and cold weather of April held most of the plants back, making the season a backward one at the end of April. The first week of May brought milder conditions, and at last the hedgerows were clothed with the green of springtime. The Oak in leaf on May 12th, and the Ash on May 19th, were nearer together than has been the case for some years, the quickened growth of this period is shown by the Hawthorn flowering on May 19th. To your Secretary the wild flower display this year has been disappointing and quicky over, some shrubs like Sloe, Hawthorn and Rose did fairly well, but few of the orchids were very good, and the Heaths came and went quickly. The delayed spring and the fine summer must have been the cause and possibly occasioned the second flowering of many species that have been recorded.

In a summary of the various fruiting reports it is evident that Oak, Horse Chestnut, Elder, Bramble, Wild Rose and Wild Apple have good crops, and that Beech, Sloe and Sycamore have poor crops. Others like Ash have some trees well fruited, but the greater number are barren. The Ash trees fruiting this year are not those that fruited last year except where the tree had an odd branch with fruit last year and a branch in another place fruiting this year. The curiously different cases of the apple and plum are interesting, the crop of cultivated apples is poor, and the wild variety very good, whereas the crop of orchard plums has been good, whilst the Sloe, its wild relation, is poor.

The question of secondary growth is very much a question of the various writers' opportunities and ideas on the subject, personally the amount on Oaks seen on the roadsides from Retford, in Nottingham, through East Yorkshire to Whitby in North Yorkshire and in the West Riding would reasonably make one assert that the growth was more than normal, but some correspondents have not agreed with this view, and a paper written by Mr. R. J. Flintoff was read and discussed at our sectional meeting; this is reported in *The Naturalist*, 1937, p. 228, and Mr. A. Wilson reports little in the following notes, he brings out a different effect of the weather in North Wales. He says:—After a mild wet winter, followed by a severe snowstorm and gale on February 28th, which did great damage to trees, March, 1937, in North Wales was a very cold month. At Ro Wen, near Conway, there were fifteen frosty nights in the screen, and with one or two exceptions there was frost on the grass every night. Vegetation after being rather early at the commencement of the month was very backward at the end. April was cloudy, but the temperature was above the average. Blackthorn was first seen in flower on the 24th, and the amount of blossom was extraordinarily great. Vegetation made remarkable progress during the month. May was showery, but rather warm, and vegetation again progressed well. There was very little strong or harsh wind, and tree foliage was luxuriant. The Wych Elm produced a great crop of fruit. Hawthorn was first seen in flower on the 21st. June was a dry month with a moderate temperature. There was again very little high wind and tree leafage, and growth was excellent. There were very few caterpillars on the Oak, as compared with most years. Dog Rose (*Rosa canina*) was first seen in flower on the 5th. July was rather cool and unsettled until the last week, when it became warm and dry. The hay was mostly secured in very good condition. August was an exceptionally fine, dry, summerlike month. At Ro Wen there were sixteen days with a maximum temperature of 70° or over, and the mean temperature of the month was 61.2°. Corn was ready for cutting early, most of the crop had been carted by the end of the month. Probably owing to the forest trees receiving no check in May and June, and the weather being dry, very little, if any, secondary growth was produced. Gardens and some farm crops suffered from drought during August; and the dryness accounted for a poor show of Bramble fruit. Both wild and garden

flowers were not so fine as usual and soon got over. During the summer small garden fruits were good, the apple crop varies, but plums appear abundant everywhere. Considering the large amount of blossom on the Blackthorn the crop of Sloes seems only moderate. There are comparatively few acorns and hardly any hazel nuts.

Mr. Norman Frankland writing from the Skipton district says : 1937 is a very good fruiting year, probably because we had very little destructive weather during the blossoming season, it has also been a good year for some Orchids, the Marsh Helleborine and Bee Orchis being particularly fine and abundant. There is a good crop of Blackberries, and most Mountain Ash trees have been heavily laden with fruit. Now about secondary growth, there is a lot of it showing very vividly just now (September 15th) and has been for some weeks. My opinion of it is that there is scarcely a year when it does not occur ; however there is certainly more new growth showing on the trees this year in my opinion than for some years past.

Mr. Wattam reporting for the Huddersfield district, says : Nothing of outstanding interest has come to my notice. The early part of the winter was wet, and it was not until the end of February that real wintry conditions ensued. There was much snow and severe and continuous frosts, 30° being registered on a few occasions. March was inclement with sunshine much below the average, in fact the whole springtime was disappointing. Sycamore, Ash, Birch and Wild Cherry all blossomed well, but this promise was not carried to a good fruit yield. July and August were on the whole delightful months. For the third successive year Hawthorn, Elder and *Rosa canina* have provided heavy crops of fruit. The Bilberry crop has also been much above the average. I have noted no secondary growth.

Mr. W. B. Haley writes from Dewsbury : A cold, wet, and prolonged spring has had its effect on most of the vegetation around this district. The Alder, Birch and Hazel flowered abundantly, the catkins of the Alder being very fine indeed, the two former have fruited well, but in this immediate district the Hazel always does poorly. Both the Wych and Common Elm flowered fairly well but set no fruit. In my more than 50 years experience, I do not remember the Sycamore to have fruited so poorly as this year. The Beech too has little or no fruit. White Beam and Mountain Ash have fruited well, the same may be said of the Hornbeam and Horse Chestnut. The Ash seems erratic, some few trees are laden with fruit, but the greater part are barren. The Oak too is a problem, some trees are fairly laden, but a great part of them have no acorns at all. Secondary growth is very marked, and I notice that those trees with most secondary growth have the least number of acorns.

In the hedgerows the Hawthorn blossom was rather scanty, though isolated bushes flowered and fruited well. Blackberries and elderberries are in abundance.

With regard to alien plants, they are now very few in this district. Our old favourite *Coronilla varia* is holding its own in spite of the raids made on it for the gardens about here. *Sisymbrium pannonicum*, *Rapistrum rugosum*, *Claytonia sibirica* and *Convolvulus americana* are still with us, but the latter has not made so fine a show of bloom this year as usual.

(Mr. A. Malins Smith) : Fruiting of 1937 in the Shipley district.— On the whole a moderate year for fruit. The most striking feature of the year is the almost complete absence of fruit on the Sycamore. I do not remember a year with so little Sycamore fruit since I came to Yorkshire in 1920. Although the crop of acorns is generally good, yet it is variable and I cannot correlate it with the position or aspect of the trees. Cottingley Woods stands out as producing the best crops, though in past years they have usually had poorer crops than the rest of the district. In the other woods of the district there are a great many trees

with small crops or none among those with good crops. I cannot refrain from remarking on one large Crab Apple tree in Cottingley Woods, which was laden with apples, even to the lowest and most shaded twigs.

Miss C. Johnson from Walton, Wakefield district : Generally tree foliage appeared unusually late, but quite suddenly this year. Autumnal tints were late in appearing, these were also sudden, but many trees have failed to develop any tint and thus to-day (October 5th) green foliage still preponderates. The leaves of the Ash have been probably less affected than those of any other tree, as the Ash are still covered with dark green foliage. Willows have been normal. Trees have again been attacked with the insect pest, producing proliferous branches. This now extends over a large area of the lower Calder Valley (Wakefield).

Miss M. Pilling sends the following interesting note from Huddersfield : I have found a considerable amount of the white variety of *Calluna vulgaris* this year on moors around Huddersfield, groups of seven or eight plants being found fairly close together where the heather was burnt two years ago, none had been seen in previous years, although the particular pieces of ground were well known; this was on Holystone Moor.

Mr. H. Britten writing from Whitby finds the year to have been a good one for the Orchid species, his notes are included in our recorder's note.

Mr. R. J. Flintoff writing from Goathland says : The long winter of 1937 was open, cold and wet ; the long spring cold and wet, so much so that seed-time was long delayed and strong land could not be worked ; the short summer dry. Although many people complain about the weather during the summer it has in my opinion, been quite good. My garden has done well. The flowering period has been satisfactory, and although apples have been a poor crop, plums have been good, the heather flowered well. There has been a poor show of secondary growths, because conditions have generally been favourable to a fully developed primary growth.

Records Committee (W. A. Sledge) WEST YORKSHIRE.—At the Y.N.U. meeting held at Fairburn, in 1934, a *Juncus* was found in very immature condition, which I recorded in the report of the meeting as *J. tenuis* Willd. In July a visit was made with G. A. Nelson to recollect this plant which was then in good fruit, and which proved to be *J. compressus* Jacq. This uncommon Rush which I recorded last year from the Austwick area has also been found by Miss C. M. Rob during the past season at Nun Monckton (V.C. 64), and at Bubwith in East Yorkshire. Associated with it at Fairburn, and growing in abundance, was *J. Gerardi* Lois., a new species to V.C. 64 and one very rarely met with inland. *Epilobium tetragonum* L., was found at Ledston on the same excursion. This Willow herb does not stand on record for Yorkshire in Topographical Botany or in the Comital Flora, though it is very probable that the records for *E. Lamyi* Schultz in Lees' Supplement Flora all refer to this species. The same species was found by the writer in company with Miss C. M. Rob and Mr. A. K. Wilson at King George Dock, Hull, where hybrids were also found with *E. obscurum* Schreb. (teste G. M. Ash). Mr. Nelson and I also found two plants at Tarn Moss, Malham, which are new to that area, viz., *Euphrasia montana* Jord., and *Carex lasiocarpa* Ehrh., It is remarkable that the latter plant has not been previously recorded from so well worked an area. Other notable records made in the West Riding include *Orobanche minor* L., at Shipley (found by Mr. Malins Smith) ; *Potamogeton coloratus* Hornem., from Potteric Carr, and *Vinca minor* L., from Brocodale Woods, already recorded in the pages of *The Naturalist*. It was gratifying to find that *Dipsacus pilosus* L., which reaches its northern limit in Yorkshire is still to be found in the Wentbridge area.

NORTH YORKSHIRE.—At the Keld meeting of the Union, *Equisetum variegatum* (Schl.) Weber, previously unrecorded for Swaledale, was

found at Kisdon Force, and some interesting species were observed at the Hutton-le-Hole excursion. Miss C. M. Rob reports $\times C. Boenninghausiana$ Weihe., from Terrington Carr; the only station in which this rare hybrid was previously known being at Castle Howard. She also records *Lemna gibba* L., from Sutton-on-Forest. Mr. H. Britten has submitted a very interesting list of Orchids from the Whitby district including the following :—

Orchis latifolia L. var. *pulchrior* (Dr.) \times *O. elodes* Griseb. Fen Bog.
O. praetermissa Dr. Helwath Beck.
O. praetermissa Dr. \times *O. Fuchsii* Dr. Helwath Beck.
O. purpurella Steph. Saltersgate.
O. elodes Griseb. \times *O. Fuchsii* Dr. Saltersgate.
O. mascula L. \times *O. morio* L. Uppang.
Gymnadenia conopsea (L.) Br. \times *Leucorchis* (*Habenaria*) *albida* (L.) Br. Saltersgate.

Mr. Britten also records the aliens *Coriandrum sativum* L., and *Centaurea diluta* Ait., from Whitby, and *Alnus incana* Medik., from Beckhole.

EAST YORKSHIRE.—The Bubwith meeting yielded several additional district records of which *Juncus compressus* Jacq., *Carex pallescens* L., and *C. vulpina* L., var. *nemorosa* Lej., are the most important. As already pointed out in the report on this meeting the two first-named plants are not included in Robinson's *Flora*. Earlier in the year Mr. R. Good and I found *Zannichellia pedicellata* Wahl. var. *pedunculata* Reichb., and *Tolypella glomerata* Leonh., at Kilnsea. Mr. A. K. Wilson records the following species :—

Diploxaxis tenuifolia (L.) Dr. Skidby chalk pit.
Caulalis arvensis Huds. Between Cliffe and Holme-on-Spalding Moor (new to V.C. 61).
Hieracium tridentatum Fr. (Det. Kew). Willerby.
Orchis praetermissa Dr. (Det. Kew). Broomfleet 'delphs.'
O. praetermissa Dr. \times *O. elodes* Griseb. (Det. Kew). Broomfleet 'delphs.'

Scirpus setaceus L. Newbald Springs (second locality in V.C. 61).
Triodia decumbens (L.) Beauv. Allerthorpe Common and Broomfleet (not listed by Robinson).
Bromus lepidus Holmb. var. *lasiolepis* Holmb. (Det. Kew). Springhead and Pickering Road, Hull.

The following aliens are also recorded :—

Brassica gallica (Willd.) Dr. King George Dock, Hull (A.K.W., C.M.R., and W.A.S.).
Lathyrus tuberosus L. King George Dock, Hull (A.K.W.).
Lythrum hyssopifolia L. King George Dock, Hull (A.K.W., C.M.R., and W.A.S.).
Hieracium aurantiacum L. Hessle (T. Stainforth); near Howden Station (A.K.W.).
Rumex dentatus L. King George Dock, Hull (A.K.W., C.M.R., and W.A.S.).

Ecological Committee (Miss D. Hilary) : Members of the Committee have attended the ordinary meetings of the Union and notes on the ecology of the various districts visited have appeared from time to time in *The Naturalist*.

In connection with the special work on the degeneration of the Juniper on Moughton Fell, a visit was paid to the plots on August 14th. The chief changes noted since the previous visit were evidences of the further degeneration and death of the bushes in the plots. In plots 2, 3 and 6, a total of five bushes of various sizes had died, and in some cases entirely disappeared, while further decay was noted in the large bush on plot 5 and in a smaller one on plot 3. In addition, the two seedlings found

on the bared plot in 1934 had vanished. On the other hand, however, a search for seedlings revealed five, in the first year of growth, near or in plot 4, each showing two cotyledons and from fifteen to twenty leaves. The soil here is fairly deep but completely covered with vegetation, and as this number, though small, exceeds the total number of first year seedlings which have been found on previous visits, it shows the possibility of regeneration, even in competition with the other plants which covered the soil. These seedlings have now been protected by wire-netting in order to keep off rabbits.

Mr. W. E. L. Wattam has been continuing his observations on the growth of Juniper seedlings and sends his fourth report. The seeds he planted in October, 1933, continue to grow and still retained their cotyledons in December, 1936. On September 30th, 1936, one of these seedlings was 6 inches high and had nineteen branches. In the same plot eleven more seedlings emerged between the 28th March and the 7th April. These have grown slowly and are now only about 2 inches high. Some of the seedlings were subjected to severe frost during the winter and assumed a purple colour with pensile growing points, but resumed vigorous growth on the return of the more genial weather.

During the summer, the President of the Committee, Mr. A. Malins Smith, had an opportunity of examining the Juniper of the Lake District, which he found to be much more healthy than that on Moughton. Gymnosporangium occurs commonly on it, and the stage of this fungus on Mountain Ash is very conspicuous. There is no sign of close cropping by animals, and although unaware of the status of the rabbit in the Lake District, considering the nature of the rocks and soil, he would judge it to be rather scarce. If so, this comparison of the Lake District Juniper with that of Moughton would seem to point to the rabbit as the chief enemy of the latter.

A further piece of ecological work in connection with the Fungi is reported by Dr. Grainger in the Mycological Committee's report.

Bryology (F. E. Milsom) : The field meetings of the Union this year have not favoured bryology to a great extent, and collections have been poor—with the exception, that is, of the Keld meeting, which nearly made up for the deficiencies of the others. Accounts are given in *The Naturalist*. Among interesting finds during the year may be noted : *Tetraphis pellucida* Hedw. and *Climacium dendroides* Web. & Mohr. found in fruit at Malham Tarn, a very robust form of *Barbula fallax* Hedw., analogous to the var. *robusta* Braith. of *B. recurvifolia* Schp. found at Great Blake Gill ; *Orthothecium rufescens* B. & S., at Keld ; and *Camptothecium nitens* Schp., at Malham Tarn. Of the hepatics, *Marchantia polymorpha* L. was found fruiting at Allerthorpe Common. Although sterile archegoniophores are of course common, fruit is rare, and is conspicuous by reason of the bright yellow spore-clusters.

Several valuable papers have appeared in *The Naturalist*. These have included ' A Time Table for the Life Cycles of some of the Liverworts in Yorkshire,' ' The Distribution of Mosses in Relation to Soil Acidity,' and ' The Genus *Trichostomum* B. & S. at Austwick.' The latter paper indicates that there is still plenty of work to be done in evolving the relationships of species which tend to run into one another. In this connection, it is hoped that the above review shows that enthusiasm for bryology in Yorkshire is by no means on the wane.

Mycology (Mr. G. Sheard) : During the past year the following new records have been added to the Fungus Flora of Yorkshire : *Entomophthora occidentalis* Thaxt., which is also a new record for Britain, *Puccinia cnici-oleracei* Pers. on thistle from Allerthorpe Common, *Graphium ulmi* Schr., *Cephalosporium dipterigenum* Petch on spider, and *Sphaerostilbe flavo-viridis* Fckl.

Observations on the Black Rust of Wheat, *Puccinia graminis* Pers. by Mr. W. G. Bramley, have shown that this fungus is much more common

in Yorkshire than is commonly supposed. Its alternative host, the Barberry, is comparatively rare in the county, and when it does appear, it rarely has acidia of *P. graminis*. It would therefore appear that this fungus possesses some other means of infecting graminaceous hosts than by acidiospores derived from overwintering teleutospores.

Repeated observations by Dr. Grainger and Mr. C. S. Ridgwick, on the occurrence of *P. fusca* Wint. on *Anemone nemorosa*, have confirmed the observation that teleutospores can travel only short distances. Plants which are more than 12 feet away from a centre of infection are not usually affected. Similar observations on *Uromyces ficariae* (Schum.) Lév. on Celandine yielded similar results. Investigations into the ecology of the higher fungi by Dr. Grainger and his associates have been continued, and give results which make it increasingly possible to assign limits of the ecological environments such as acidity and moisture content, to various species.

The generosity of Mr. R. C. Fowler Jones has made it possible to publish the records of Yorkshire fungi. This will form an exact basis for future classification, and is a much-appreciated contribution to the work of the Committee.

INCOME & EXPENDITURE ACCOUNT

Year ending, October 4, 1937.

[illegible]

BALANCE SHEET, October 4, 1937.

LIABILITIES.		£ s. d.		ASSETS.		£ s. d.	
Life Members' Account	...	404	5 0	Cash at Bank	...	122	12 9
Balance due to Editors	...	0	2 8	£200 4% Consols	...	200	0 0
Treasurer	...	0	12 2	£100 3½% Conversion	...	100	0 0
Booth Fund	...	100	0 0	£170 16s. 9d. 4½% Conversion	...	170	16 9
Cheeseman Fund	...	100	0 0	£100 3½% War Loan	...	100	0 0
Subscriptions paid in advance	...	4	15 0				
				Subscriptions unpaid	...	76	19 6
				Written off	...	26	19 6
						50	0 0
Balance of Assets over Liabilities	...	133	14 4				
		£743	9 2			£743	9 2
				Examined and found correct.			

S. D. PERSY FISHER,
Hon. Treasurer.

Examined and found correct,
2nd November, 1937.
JOHN R. DIBB } *Hon. Auditors.*
W. D. HINCKS }

THE VEGETATION OF YORKSHIRE AND SUPPLEMENT TO THE FLORAS OF THE COUNTY

(Continued from page 296, Nov. 1937)

GROUP VIII.—*Egregii*

R. mucronatus Blox. V.C. 63, 64.

Y. Lane hedge between Bishop Monckton and Ripon, Herb. Lees,
A. Hainworth Wood, Keighley, Herb. Lees. Adel Valley.
Moortown, and Roundhay Park, Leeds, 1908, A.E.B.

D. Hooton Cliff, near Doncaster, 1859, A. Bloxam. Ecclesall Wood,
Sheffield, Thos. Gibbs.

R. anglosaxonicus Gelert. Type not yet recorded.

— var. *setulosus* Rogers. V.C. 64 (= *R. infestus* of many British authors). As densely prickly as *dasyphyllus*, but very different from that bramble in its wide, loose, white-flowered panicles.

A. and W. Shadwell near Leeds (footpath to Roundhay), 1908 ;
frequent in the lanes between Shadwell and the villages of East
Keswick and Bardsey, 1909, A.E.B.

R. infestus Weihe. V.C. 63, 64, 65. Locally common. *Not* the *infestus* of the *Flora*, which was possibly the foregoing. This plant is very curious in having the barren stem aciculate and setose only in its upper portion, whilst below there is no armature beyond the large prickles on the angles.

L. Near Sedbergh, 1906, W. M. Rogers.

W. Castley, 1899, G. B. Savery. North Rigton to Leathley, 1909 ;
Scarcroft, 1908, A.E.B.

A. Lane near Meanwood Hall ; King Lane, and Wike, near Leeds,
1909, A.E.B.

D. Hagg Wood, Denby Dale, T. W. Woodhead.

— *Hybrid, R. infestus* X *Godronii* var. *robustus*. V.C. 65.

L. Near Sedbergh, 1906, W.M.R. (Not included by Mr. Rogers
among the *clearly known* hybrids in *Lon. Cat.*, 10th ed., 1908.)

R. Drejeri G. Jensen. V.C. 63, 64, 65. A West and North of England
bramble. This has very broad roundish leaflets, with a short
point, and short declining prickles on a hairy stem.

L. Dent Valley, 1906, W. M. Rogers.

N. Moor above Harrogate, 1905, S. H. Bickham. Corner of Brearton
Lane and Docker Bush Lane, near Ripley, 1909, F.A.L. and
A.E.B.

D. Loxley Valley, Sheffield, 1846, W. W. Newbould. (The spns.
from this locality were those on which the late Professor Babington
founded his new species, *Newbouldii*, but they have since proved
to belong to *R. Drejeri*, which had been described, in Denmark,
a few years earlier than *Newbouldii*. The latter name is now in
use for a different plant.)

GROUP IX.—*Radulae*

R. Radula Weihe. V.C. 63 (64). Described in the *Flora* as common,
but forms of *podophyllus* and *dasyphyllus* were included under the name.
We have no *recent* record for the type, which (as far as we know at present)
is very rare in our area. In the North Riding it has lately been gathered
at Easby, Catterick Bridge, and Ainderby.

(R. Between Wigglesworth and Tosside, 1876, Herb. Lees.)*

(W. Near Acomb, Geo. Webster, Herb. Lees.)*

D. Cliff Rocher, near Bradfield, about 1870, Amos, Carr Herb.
Lees. 'Clearly typical *Radula*,' W.M.R.

* Not satisfactory material.

— . *sub-species echinatoides* Rogers. V.C. 63, 64.

R. Giggleswick and Long Preston, abundant, 1890, W.M.R.

C. Riding Bridge, Herb. Leyland.

D. Loxley, W. W. Newbould and Herb. C. C. Babington.

R. echinatus Lindl. V.C. 63, 64. Local. A conspicuous handsome plant with pointed leaflets which are very deeply and irregularly cut. The stem-faces have an ' unshaven ' appearance, with their dense growth of very short hairs and bristles ; the stem-angles have long, more or less equal, prickles. In the Wike bushes the petals taper towards their apex, and have a minute but distinct notch.

N. Near the Crimple, Pannal Valley, 1876, Herb. Lees.

W. Lane between Bardsey Church and East Keswick, with *rusticanus* 1909, A.E.B.

A. Wike Village, near Leeds, 1909, A.E.B.

T. Firbeck, 1876, Herb. Lees.

R. podophyllus P. J. Muell. V.C. 63, 64. Rough stony places, in the open, or in thickets and woods. Locally very abundant, especially in the central and southern portions of the Riding on Millstone Grit or Coal Measures. Remarkably variable in armature and degree of hairiness ; but nearly glabrous forms with strong short armatures are the most usual with us. Some of them seem to be what was formerly called *festivus* Warren ; others have been incorrectly named *Lejeunii*.

Except for the form mentioned separately below, which may be of hybrid origin, all the plants observed have the white or greenish-white petals (not fading pink) and the finely (though irregularly) toothed leaflets, with a tendency to produce an abrupt cusp, which are so characteristic of the species.

N. Burnt Bridge near Pannal, 1909, A.E.B.

W. Stainburn Road, Leathley, 1899, G. B. Savery. North Rigton, Scarcroft, Barwick-in-Elmete, 1908-9, A.E.B.

A. Lotherton, 1878, Geo. Webster. Meanwood, Adel, Shadwell, etc., near Leeds, 1908 ; Hook Moor, Aberford, and about Garforth, 1909, A.E.B.

C. Coxley Valley, 1890, P. F. Lee. Broadhead near Mytholmroyd, 1906, W. B. Crump.

D. Wharnccliffe and Endcliffe Woods, about 1870, Amos Carr. Near Ecclesall Church, Thos. Gibbs. Rivelin Valley, Sheffield, 1908, A.E.B. Bank of the Don, above Doncaster, 1902, C. H. Waddell.

— . ? var. (approaching *R. dasyphyllus* Rogers). V.C. 63, 64. A bramble belonging to *podophyllus* in the aggregate sense, but varying strongly in the direction of *R. dasyphyllus* is locally frequent over a considerable area in West Yorks., and occurs beyond our limits at Woodhall-in-Carperby, Wensleydale (Herb. Lees). It would be interesting to know the full extent of its distribution.

It differs from our other forms of *podophyllus* in having pinkish petals (if white, fading pink), leaflets with a coarser serration, much as in *dasyphyllus* and they are more tapering and never cuspidate. The best developed panicles have long patent lower branches widely separated one from another. The stem is usually hairy, with a few aciculi and stalked glands. The *podophyllus* in the Appendix to the *Flora* was this form, which looks like a well-established local species.

A. Meanwood, Adel, Shadwell, Wike, etc., near Leeds, 1908, A.E.B.

C. Howley Hall, Batley, 1887 ; Soothill and Whitley, 1887, P. F. Lee. Broadhead near Mytholmroyd, 1906, W. B. Crump.

— Hybrid, *R. podophyllus* X *dasyphyllus*. V.C. 64.

A. Roundhay Park, Leeds, 1909, A.E.B. A sterile plant growing with both parent species, in shade. Though resembling weak forms of the last, it has every appearance here of being a direct hybrid.

GROUP X.—*Sub-Koehleriani*

[*R. Bloxamii* Lees. In Mr. Rogers' *Handbook* vice counties 63 and 64 are given for this bramble on the authority of the *Flora*, which in this instance he now thinks insufficient. At present the species is not certainly known to occur north of Leicester and Rutland.]

[*R. Babingtonii* Bell Salt. See *Flora*, under *scaber*, p. 219, and Appendix, p. 787. The spns. referred to are now in such bad condition that they cannot be named.]

GROUP XI.—*Sub-Bellardiani*

[*R. foliosus* Wh. and N. (= *R. Guntheri* Bab.; *R. flexuosus* P. J. Muell.) ? V.C. 63. It would be desirable to obtain modern confirmation of the old Hebden Bridge record, before including this species.]

GROUP XII.—*Koehleriani*

R. rosaceus Wh. and N. SP. COLL. V.C. 63, 64. Rare. So far only known in West Yorks. by several different forms referable to it in the aggregate sense. The Tosside and Rivelin plants have the sepals clasping the fruit, and probably belong to the sub-species *infecundus* Rogers. They would have been called *hystrix* in the past, but are not what is now recognised as that plant.

R. Brushwood near road, Tosside Chapel, 1876, Herb. Lees.

W. Bank Top near Arthington, 1910, A.E.B.

A. Wike near Leeds, 1909, A.E.B.

D. Rossington Bridge, 1899, H. H. Corbett. Loxley near Sheffield, *Bab. Brit. Rubi.* Rivelin Valley, Sheffield, in quantity, 1907, A.E.B.

(The *Flora* gives localities in Y. and T. districts also.)

— var. *hystrix* Wh. and N. V.C. 63, 64. Rare.

W. Chandler's Whin, Geo. Webster, Herb. Groves. Near York (*forma umbrosa*), Herb. Lees.

D. Lane near Poverty Hill, Rossington, 1901, H. H. Corbett.

R. Koehleri Wh. and N. SP. COLL. V.C. 64. Forms near the type appear to be uncommon; our usual plant, formerly named *Koehleri*, or var. *pallidus*, is *R. dasyphyllus*.

A. Esholt, W. West.

[— var. *cognatus*, N. E. Brown. ? V.C. 63.

D. Rivelin Valley, Sheffield, Thos. Gibbs. 'Rather radulan form I give this provisionally only.'—W.M.R.]

(To be continued).

COLLECTING APPARATUS.

Nets	Vascula	Aquaria
Entomological Apparatus	Plant-Presses, etc.	Geologist's Apparatus
Larva-Cages	Pond-Nets	Dissecting Instruments
Vivaria	Collecting Tubes	Microscopes, etc.

All requisites for indoor or outdoor work in every branch of Natural History.

FLATTERS & GARNETT, LTD.,
309 OXFORD ROAD, MANCHESTER.

The EARLY HISTORY *of the* NORTH RIDING

By WM. EDWARDS, M.A.

Demy 4to (9" × 11¼"), 283 pages, with 16 plates, frontispiece in sepia, and Map of the North Riding at end. Full cloth 10/6 net, post free 11/0. Edition de luxe, full leather, gilt top, 21/- net, post free 21/6.

CONTENTS :—I. Prehistoric Times—II. The Romans—III. The Anglican Kingdom of Northumbria—IV. Pre-Conquest Monasteries—V. The Northmen—VI. The Norman Conquest and Settlement—VII. Political History under the Normans and Early Plantagenets—VIII. The Feudal System—IX. The Barons—X. North Riding Castles—XI. Thomas, Earl of Lancaster—XII. The Danger from the Scots—XIII. The Foundation of the Religious Houses (I.)—XIV. The Foundation of the Religious Houses (II.)—XV. The Life and Works of the Monks—XVI. The Wealth and Power of the Religious Houses—XVII. Churches and Chantries in the Middle Ages—XVIII. Town Life in the Middle Ages—XIX. Country Life in the Middle Ages—XX. The Forests—XXI. Early Yorkshire Pedigrees—Index of Place Names ; Index of Personal Names ; Index of Subjects.

The Manchester Guardian says :—" This is a readable, popular history from the New Stone Age to the fifteenth century, with chapters on the feudal system, on the numerous monasteries in the district, and on the daily life of monk and layman in the Middle Ages. In the period to which it relates the Riding was the scene of many foreign invasions and of much civil war, and the author's object has been to show the relation of the local history to that of the nation. The volume contains many illustrations, and the price is astonishingly low for so handsome a work."

LONDON : A. BROWN & SONS, LTD., 5 FARRINGDON AVENUE, E.C.4.
AND AT HULL.

Issued bi-monthly, Illustrated with Plates and Text Figures.
To Subscribers, 12s. 6d. post free.

The Scottish Naturalist

With which is incorporated 'THE ANNALS OF SCOTTISH NATURAL HISTORY'

EDITED BY

A. C. STEPHEN, D.Sc., F.R.S.E.

Keeper, Natural History Department, Royal Scottish Museum.

AND

PERCY H. GRIMSHAW, I.S.O., F.R.S.E., F.R.E.S.

Formerly Keeper, Natural History Department, Royal Scottish Museum.

Assisted by :—Professor JAMES RITCHIE, M.A., D.Sc., F.R.S.E. ; EVELYN V. BAXTER, F.Z.S., H.M.B.O.U. ; LEONORA J. RINTOUL, F.Z.S., H.M.B.O.U. ; H. S. GLADSTONE, M.A., F.R.S.E., F.Z.S. ; C. H. O'DONOGHUE, D.Sc., F.R.S.E. ; ANDERSON FERGUSON, F.R.E.S. ; A. R. WATERSTON, B.Sc.

Subscriptions should be addressed to the Publishers,
Messrs. OLIVER & BOYD, LTD., Tweeddale Court, Edinburgh.

WATKINS & DONCASTER

NATURALISTS,

36, STRAND, LONDON, W.C.2

(Five doors from Charing Cross),

P.O. Box 126.

Telephone: Temple Bar 9451.

Keep in stock every description of

APPARATUS, CABINETS, BOOKS & SPECIMENS

for Collectors of

BIRDS' EGGS, BUTTERFLIES, MOTHS, Etc.

Catalogue (96 pages) sent post free on application.

BINDING "THE NATURALIST"

Volumes of THE NATURALIST for any year can be bound in a serviceable and attractive Cloth Case, dark blue and gilt lettered on back and side. Price 4/- per volume, or post free 4/6.

A. BROWN & SONS, LIMITED
PERTH STREET WEST, HULL

The Entomologist's Monthly Magazine

PRICE TWO SHILLINGS MONTHLY.

EDITED BY

K. G. BLAIR, B.Sc., F.R.E.S.

R. W. LLOYD, F.R.E.S.

H. G. CHAMPION, M.A., F.R.E.S.

F. LAING, M.A., B.Sc., F.R.E.S.

J. E. COLLIN, F.R.E.S.

H. SCOTT, M.A., Sc.D., F.L.S.

J. J. WALKER, M.A., R.N., F.L.S.

This Magazine, commenced in 1864, contains Standard Articles and Notes on all subjects connected with Entomology, and especially on the Insects of the British Isles.

Subscription—15/- per annum, post free, to—

**NATHANIEL LLOYD & CO., LTD., BURRELL STREET,
LONDON, S.E.1.**

NORTH WESTERN NATURALIST

A SCIENTIFIC AND EDUCATIONAL JOURNAL (Published Quarterly), especially for Cheshire, Cumberland, Derbyshire, Isle of Man, Lancashire, North Wales, Shropshire, Staffordshire and Westmorland.

EDITED BY A. A. DALLMAN, A.L.S., F.C.S., in collaboration with

H. BRITTEN, F.R.E.S.

J. W. JACKSON, D.Sc., F.G.S.

F. J. BROWN, M.Sc.

T. A. JONES.

Rev. G. H. CARPENTER, D.Sc.

H. W. MILES, M.Sc., Ph.D.

W. E. COLLINGE, D.Sc., F.S.A.

C. L. WALTON, M.Sc., Ph.D.

R. H. CORSTORPHINE, B.Sc., F.L.S.

F. E. WEISS, D.Sc., F.R.S., LL.D.

R. J. FLINTOFF, F.L.S., F.Z.S., F.C.S.

A. WILSON, F.L.S., F.R.Met.S.

H. E. FORREST, F.L.S.

Communications to:—

Editorial—A. A. Dallman, A.L.S., F.C.S., 12 Tickhill Road, Doncaster.

Business—T. Buncle & Co., Ltd., Market Place, Arbroath.

Annual Subscription, 7/6. Single copies, 2/- net.

Printed by A. BROWN & SONS, LTD., Perth Street West, Hull, and published by A. BROWN & SONS, LTD., at 5 Farringdon Avenue, in the City of London. January, 1938.

The NATURALIST

A MONTHLY
ILLUSTRATED JOURNAL
PRINCIPALLY FOR THE NORTH OF ENGLAND

Edited by

W. H. PEARSALL, D.Sc., F.L.S., and W. R. GRIST, B.Sc.,
The University, Leeds.

with the assistance as referees in special departments of

H. B. Booth, F.Z.S., M.B.O.U.

J. M. Brown, B.Sc., F.R.E.S.

W. H. Burrell, F.L.S.

Chris. A. Cheetham, F.R.E.S.

W. J. Fordham, M.R.C.S., L.R.C.P.,

D.P.H.

Riley Fortune, F.Z.S., F.R.P.S.

Professor A. Gilligan, D.Sc., F.G.S., M.I.M.E.

Mrs. Elsie M. Morehouse.

Thos. Sheppard, M.Sc., F.G.S., F.Z.S.

T. W. Woodhead, Ph.D., M.Sc., F.L.S.

Contents

PAGE

Bird-life by the River Yore in Winter— <i>John P. Utley, B.Sc.</i>	53-55
Recent Flower Immigrants— <i>Chris. A. Cheetham.</i>	55-56
Soil Types and Plant Ecology in Yorkshire (illustrated)— <i>W. H. Pearsall</i>	57-64
The Ecology of Perennial Rust Fungi (illus- trated)— <i>John Grainger and Charles Ridgwick</i>	65-70
Records	71-72
Beetles in 3-ply Board— <i>Rosse Butterfield</i>	73
Field Note	73
Reviews and Book Notices	73-75
Correspondence	75-76
News from the Magazines	64, 70, 76
Illustrations	57, 61, 65, 67

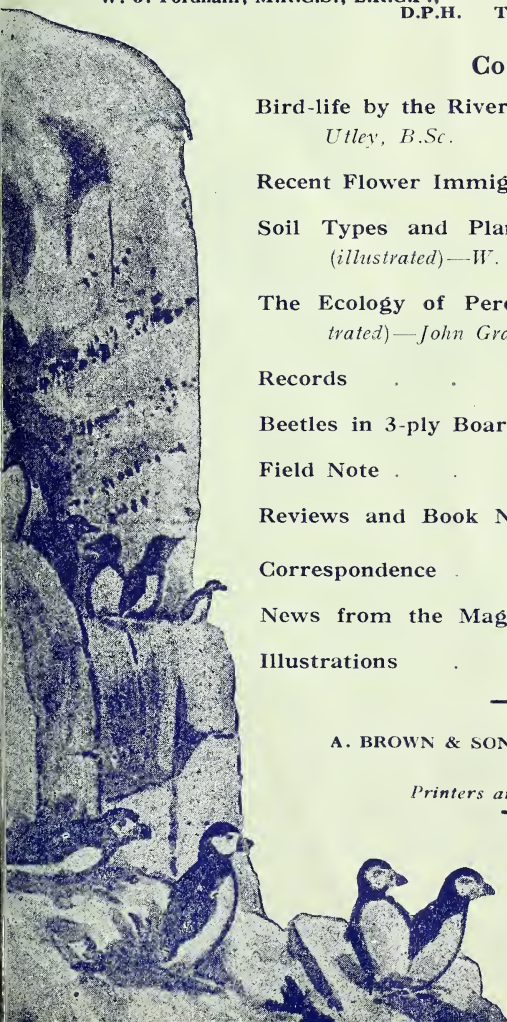
LONDON :

A. BROWN & SONS, Ltd., 5 Farrington Avenue, E.C.4.
And at Hull.

Printers and Publishers to the Y.N.U.

PRICE 1/6 net.

Prepaid Subscription
15/- per annum.



YORKSHIRE NATURALISTS' UNION

VERTEBRATE SECTION

President of the Section : C. W. MASON

Two MEETINGS will be held in the Library of the Church Institute, Albion Street, Leeds, on Saturday, February 19th, 1938, at 3-15 p.m. and 6-30 p.m. The following papers will be read :—

- ' The British Grass Snake ' (illustrated) by Ellen Galloway.
- ' The Peregrine Falcon at the Eyrie ' (illustrated) by H. B. Booth, F.Z.S., M.B.O.U.
- ' The Home-life of the Buzzard ' (illustrated) by H. G. Wagstaff, F.R.P.S.
- ' Nature Studies in Motion Pictures ' by Messrs. G. R. Edwards and V. S. Crapnell.

Members and Associates are cordially invited to attend and bring notes, specimens and lantern slides. Will Officers of Affiliated Societies kindly notify their members?

11 The Avenue,
Clifton, York.

E. WILFRED TAYLOR,
Hon. Secretary.

COLLECTING APPARATUS.

Nets	Vacula	Aquaria
Entomological Apparatus	Plant-Presses, etc.	Geologist's Apparatus
Larva-Cages	Pond-Nets	Dissecting Instruments
Vivaria	Collecting Tubes	Microscopes, etc.

All requisites for indoor or outdoor work in every branch of Natural History.

FLATTERS & GARNETT, LTD.,
309 OXFORD ROAD, MANCHESTER.

BINDING "THE NATURALIST"

Volumes of THE NATURALIST for any year can be bound in a serviceable and attractive Cloth Case, dark blue and gilt lettered on back and side. Price 4/- per volume, or post free 4/6.

A. BROWN & SONS, LIMITED
PERTH STREET WEST, HULL

BIRD-LIFE BY THE RIVER YORE IN WINTER

JOHN P. UTLEY, B.Sc.

THERE was a light covering of snow, about three inches on the fields, but in the woodland there was much bare ground. The morning was crisp and clear following two nights of keen frost, and I decided to explore a piece of woodland on the banks of the Yore: a tract which had always appeared a likely haunt for birds in winter time.

Going West I took the field side of the wood. The Hawthorn hedges were bare, frost and wind had scattered the last leaves. This year the berry-eating birds, Blackbird, Thrush and Fieldfare are finding the hedgerows a poor larder—a great contrast to last year. Haws and Elderberries are practically absent, while the Rowan tree on the hillside carries scarcely a berry. Holly berries are also hard to find.

As I walked along an occasional rustle in the hedge bottom would indicate the presence of an undemonstrative Hedge-sparrow. On an outstanding twig, that bundle of winter brightness—the Robin, sang cheerfully, but his song was drowned by the 'Cha-chak' of a flock of Fieldfares who rose en masse at my approach from their scrutiny of manure heaps recently led out on to the land. It needs a very wary approach or a long period of waiting in concealment to obtain a 'close up' of the Fieldfare, and in the sharp air of the morning my footsteps crushing the crisp leaves of Oak and Sycamore were obvious herald of my approach. Blackbirds and Thrushes were showing lively interest in these leaves: there was a Blackbird, head down, giving a few vigorous scratches with his feet; then he stood motionless, head in the air, then as suddenly commenced to dig energetically with his beak.

I moved on and something of a rich dark-brown colour disappeared among the crinkled leaves with the quickness of a mouse; but almost before I could take a further step there came from the other side of the fence the impetuous rush of notes which forms the song of the Wren. I caught a glimpse of him as he magically left the top of an old tree stump.

Here in the wood on my right were old and venerable trees, Sycamore, Oak and Beech, the lower branches of the latter still clothed in deep yellow and auburn. A movement on a Sycamore trunk caught my eye and there was a Nuthatch on a most painstaking tour of exploration. Any way he moves—up, down, or sideways—unlike the Tree Creeper, who prefers to climb to the top. As I watch he finds a piece of bark flaking away and behind it something to suit his palate.

Near by was a clump of very stiff and angular-looking Elderberry bushes. There was movement near the tip of a

twig, and focussing the glasses I watched a Marsh Tit examining all around the latent buds : on approaching I discovered two pairs all similarly engaged. Great Tit, Blue Tit and Cole Tit are always in evidence about here, but this was the first time I had seen the Marsh Tit in the locality. He looks very drab compared with the bright and audacious Great Tit.

A call ahead attracted me and I looked up in time to see a Greater Spotted Woodpecker alight on a trunk and disappear behind it : since I was going in that direction I knew the same procedure would be repeated a few times.

Presently I came to a small clearing in the wood—clear of trees, but thickly encumbered with the dry stalks of Cow Parsnip. As I looked over through a gap in the fence there came from these dried stalks quite a few cries of alarm, and a number of birds hastily adjourned to neighbouring tree branches to be identified as Bullfinch and Goldfinch, two gay residents who nest in the vicinity. I passed on and the quiet flutings of the Bullfinch indicated that they had resumed their feeding.

A few conifers are now mixed with the hardwood trees and the commoner Tits eye me from all angles, but that bird with light underparts and curved beak, creeping along the underside of a branch was no Tit but a Tree Creeper. After watching his snake-like movements for a while I moved on—so did the Woodpecker.

Some of the backwaters of the river extended right into the wood, but these were frozen over and save for some Pheasants scratching among briars on the banks, these gave no sign of bird life. Usually Moorhen and Dabchick are to be found here.

A little further on the wood came to a point on the river bank. Here I turned to come down with the river. As I did so the Woodpecker again called out and this time he crossed the river with loping flight to the woods beyond.

My appearance on the river bank caused something of a panic. There was a rush of water, some hasty 'quacks' and about a score of Mallard took wing and were soon circling around above the trees. A Dipper bobbed first this way, then that, then whirled away up-stream, while three or four Moorhen with trailing legs, decided the far side of the river was best and vanished among the Willows. Dabchick were more discreet, they simply dived and were gone.

As I moved down the bank, Robins and Wrens kept appearing from odd corners, and Chaffinches were busy among the Alders by the river. Soon I came to a stretch of old and tall Larch trees. I stood underneath admiring them and looking up to estimate their height received a flake of Larch cone on my cheek. This demanded investigation and further

search revealed about a dozen birds bustling about in the very topmost branches. Hastily I sought a good vantage point and with the aid of my binoculars had an interesting five minutes watching a Crossbill dissect a Larch cone, and explain the fall of a flake to my cheek.

I brought my gaze to earth again, but it was arrested by a movement among the lower branches of the same Larch trees, and here, twittering away quickly, but ever on the move, were a number of that marvellous little mite of British bird life—the Golden Crested Wren. It seems incredible that what looks but little more than an animated bit of down, has the strength and power to cross the four hundred miles of North Sea. True, very many fail, but also very many win through. These birds may not be visitors, for the Gold Crest nest in the big Pines not far away.

Through the Larch trunks I could discern a gravelly stretch of the river-bed and here one or two quick movements of twinkling red legs, and a few flute-like notes told me Redshank were feeding there.

Downstream were some Beech trees and on the ground beneath them Wood Pigeon were busy scratching and picking up nuts. How their wings whistled as they rose when disturbed.

Beyond the Beeches was some low scrub and here Blackbird and Thrush were frequently met. Here, too, were Mistle Thrush feeding : they made for the tree tops as I approached, but the Blackbird and Thrush remained.

I did not see any Redwing on my walk, nor have I noted many anywhere in the district. So far their numbers are small.

When I returned to the car a Robin was perched on the running board. Surely we have no bird so homely and lovable.

RECENT FLOWER IMMIGRANTS

CHRIS. A. CHEETHAM

At a recent meeting of the Austwick and District Field Club an attempt was made to fix the dates when some plants were first noted in the district. The Monkey flower, *Mimulus luteus* or, as it is known now, *M. Langsdorffii* Donn., was the plant that suggested the discussion ; at present it is seen on many stream banks and small rill sides both here and all over the British Isles.

In Windsor's *Flora Cravoniensis*, 1873, the statement of W. Howson in his *Guide to the Curiosities of Craven*, 1850,

' that it grew at Horton ' is repeated with doubt and this is the only reference given there about the plant in this district. In *Flora Cravoniensis* there are many records of plants around Feizor by R. Clapham, who lived there, but no mention is made of the *Mimulus*. It must have got into the stream there soon after this as Mrs. Wilman, of Feizor, stated that her husband had known it there since his childhood, and always said it must have got into the stream from some Feizor garden. The date 1873 is on the *Flora Cravoniensis* but this was after the author's death in 1868 and he was then 81 years of age, and most of his work was probably written much earlier ; Wilman's childhood would be around 1860.

Canon Wynne Edwards says that he found it on Fen Beck in 1880 and that he took it to Dr. Watts at Giggleswick School who was very interested in the discovery ; it was evidently little known then. Dr. W. A. Sledge has kindly given me the following notes. The *Mimulus* was introduced into this country from America in 1812 and recorded from Invergowrie Burn, Forfarshire, by L. Lawson in 1845 but it was seen by Rev. W. T. Bree at Abergavenny in 1824. In Yorkshire the first record is that of Baker in 1850 in the Skell at Studley and this is probably about the date of its introduction into the stream at Feizor as it evidently was at Horton in Ribblesdale four or five miles away at that time.

Other plants mentioned were the large Balsam now so common on the banks of our rivers where there are long silt banks that it easily colonises, over-growing small and less quickly growing species. These conditions do not obtain near Austwick and the Balsam is only seen in gardens or near them. It is a plant that has come into the county since 1890. The Canadian Waterweed is also uncommon in our district, the streams generally run too quickly for it, but it is well established in the Wenning at Swine-a-Wheel. The Gothland Sandwort of the Ingleborough tracks first noted in *The Naturalist* in 1889 and the Welsh Poppy now seen in many places far from houses and gardens as for instance the entrance to Long Churn and given by J. Tatham at Feizor in 1832, are both introductions. They could hardly have been overlooked by the keen-eyed early botanists who visited the district.

Lastly the Pineapple Weed or Rayless Chamomile, now a plant of every farmyard, which was seen by Dr. Lees about 1870 and considered a rayless form of the Corn Chamomile. It was first reported as fairly widespread at Clapham in 1911 and the late J. Beanland wrote in 1907 that it had long been in one place near Bradford but was now in the district all around.

SOIL TYPES AND PLANT ECOLOGY IN YORKSHIRE

W. H. PEARSALL

(Being the substance of the Presidential Address to the Yorkshire Naturalists' Union, delivered at Wakefield, December 4th, 1937.)

It is fitting in addressing the Yorkshire Naturalists' Union to remind its members that much of the earliest work on plant ecology in this country—and work which, certainly, greatly affected the British outlook on this subject—was carried out in Yorkshire. The circumstances of occupation

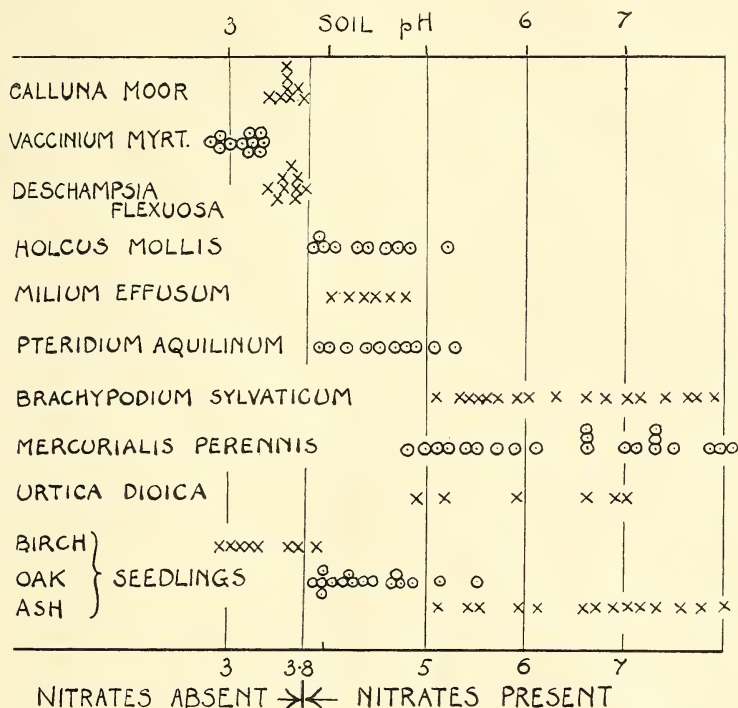


Fig. I

brought W. G. Smith to Leeds, and his activities quickly attracted the interest of T. W. Woodhead, W. B. Crump, and C. E. Moss, all of whom made notable contributions to our knowledge of Yorkshire vegetation. As a result the types of vegetation in West Yorkshire are as well known as is the distribution of the individual components of the flora. A notable outcome of this early work was the realisation of the great importance of soil conditions in determining the groupings of British plants. Thus, in England, emphasis tended

to be laid on these soil or *edaphic* factors as the prime factors in controlling the distribution of types of vegetation, *e.g.* ashwood on calcareous soils and oakwood on siliceous soils. At the same time, however, other and particularly American workers were laying emphasis on climate as the main group of factors controlling the distribution of different types of vegetation. They came to recognise that each type of climate tended to produce a characteristic *climax* type of vegetation, into which the vegetation of all types of soils tended to pass.

It is possible to recognise now that the contrast between these views is largely the result of special circumstances. In the great continental areas of the world there is considerable evidence to show that each characteristic climate tends to produce a constant soil type—almost irrespective of the diverse geological origins of the soils in different localities. Only in areas where recent geological disturbance has exposed the underlying rock, and where such disturbance is leading, by weathering of cliffs or rock surfaces or by deposition of alluvia, to the production of *new* soils, do the soil types vary and the vegetation types vary in response to the soil factor. In such areas, great variety of vegetation types is the rule, and, if time permitted, it would be profitable to develop this aspect of the case to show that much of Yorkshire must be included in this category.

The other circumstance which must be considered is that the British Isles include a wide range of climate. The South and East of England have a climate which corresponds fairly closely with that of the deciduous forest belt of continental Europe. On the other hand, in parts of Western Ireland and North West Scotland, native deciduous forest appears to be quite or nearly absent and the country is covered by damp moorland, which appears to represent the *climax* vegetation type in the much wetter climate which prevails in those areas. Much of our islands, particularly in the north and west, thus lies in regions which are climatically intermediate between these extremes, and, under such conditions, variations in drainage and in other soil conditions must exert a preponderant effect in determining which type of vegetation prevails.

In dealing with the types of vegetation in West Yorkshire we have to keep these climatic influences constantly in mind. The generalisation that soils tend to come into equilibrium with the climate is particularly useful in considering the main types of vegetation in this area, roughly that of the Smith and Moss map—Leeds and Halifax District (1903). We may say that three main units of vegetation exist: (1) deciduous forest, (2) heather moor, and (3) cotton grass moor. These have fairly definite altitudinal ranges and for

areas of *similar and slight slope*, the forest type tends to be present up to about 600 feet, heather moor from this up to about 1,000 ft. and cotton grass moor from 1,000 to 1,500 ft. (Grasslands are excluded as representing biologically induced types of vegetation.)

The climates of these zones differ markedly. Records of rainfall, even at the higher levels, are so numerous that we can assume that a rainfall of about 48-50 ins. per annum is usual at 1,200 ft., this being here about the average height of cotton grass moor. At 800 ft. there are about 40-42 ins. of rain per annum on an average and at 200 ft. the average rainfall is about 28 to 29 ins. and these respectively represent averages for heather moor and woodland zones.

In a similar manner, the rainfall is not only heavier at the higher altitudes but it is also more frequent. On an average rain to a depth of more than 0.04 in. (1 mm.) falls on 130 days per annum at 200 ft., on about 160 days at 800 ft. and on 180 days at 1,200 ft. The effect of this greater and more frequent rainfall must tend to operate in two directions; firstly, it must keep the soil more continuously wet and secondly, it must tend to leach or wash it at a greater rate and so remove bases (especially lime) and nutrient materials such as available nitrogen. These effects, however, are not proportional to rainfall because a large part of the annual rainfall is lost by evaporation. We may estimate that the amount of evaporation per annum is of the order of 18 ins. (The publications of the British Rainfall Organisation amply illustrate the difficulties of measuring this quantity and justify the figure used.) For stations for which long enough records (30 years) are available we can estimate the monthly distribution of rainfall as follows, with typical monthly evaporation figures for Yorkshire.

RAINFALL (2 STATIONS) AND EVAPORATION IN INCHES

STATION	Jan.	Feb.	Mar.	Apl.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
Woodhead ...	4.1	3.5	3.7	3.1	3.4	3.7	4.2	4.4	4.6	5.8	5.1	4.6
Doncaster ...	1.8	1.6	1.6	1.9	2.7	2.3	2.7	3.1	1.8	3.6	2.0	2.9
Evaporation...	0.1	0.4	0.9	1.8	2.8	3.3	2.9	2.2	1.7	0.9	0.3	0.2

It will be seen that in the Doncaster district, representing a typical woodland area, the monthly evaporation figures equal or exceed the rainfall for five months in summer. In the wetter high Pennines, monthly rainfall is always greater than evaporation. Thus for five months in summer the woodland sites tend to get dry and their soils are then, at least, well aerated. In the upland areas, the soils are always receiving moisture and, relatively, must tend to maintain a higher summer water content and hence to contain a lower

proportion of air. This effect, as will be shown later, has tended to produce a different soil type in the cotton grass zone. Since so large a proportion of the rainfall may be re-evaporated to the air, the actual amount available for leaching the soil must clearly be represented by the rainfall minus the evaporation, though an unspecified amount may run off as purely surface water during heavy storms. Thus in the cotton grass zone, about 30-32 ins. of rainfall is available for leaching, whereas in the woodland zone (200 ft.) only about 10-11 ins. are available for this purpose. Thus leaching would tend to progress about three times as fast in the highest zone. I wish to emphasise this point strongly, that the *rate of change* of soils increases very rapidly with increased rainfall, and to a far greater extent than is usually assumed. Relatively, then, our upland soils in West Yorkshire changed rapidly while the woodland soils have changed slowly. The former differ not only in the fact that they are more leached—but also in their higher relative water content (*cf.* Crump, 1913). They are consistently poorer in bases (*e.g.* lime) and in available nitrogen.

The simplest way of estimating approximately the deficiency of bases in a soil is that of measuring the hydrogen ion concentration, the results being expressed as pH values. With this method, the very base deficient, and hence acid, soils have a pH of 4 or less while calcareous soils range about pH 7 (see fig. 1). We can classify the woodland soils in relation to their vegetation and pH value as is shown in fig. 1. (Fuller results and details of methods are given elsewhere, Pearsall, 1938.) Such plant communities as those of dog's mercury (*Mercurialis perennis*) and the grass, *Brachypodium sylvaticum*, are found on soils, usually above pH 5, which are calcareous or only slightly base deficient at most. The soft grass (*Holcus mollis*) which is usually associated with blue bells and bracken (see Woodhead, 1906) usually occurs below pH 5.4 but is not found on soils more acid than pH 3.8. *Milium effusum* and *Teucrium scorodonia* communities also occur on soils of this pH range. All of the above soils normally contain nitrates. Such plant communities as those of the silver hair grass (*Deschampsia flexuosa*) and bilberry (*Vaccinium myrtillus*) are found on soils below pH 3.8, these being extremely base deficient and peculiar in having no nitrates present in the natural condition.

Two other features of these soils are of interest. Although it is difficult to determine the soil conditions in which the trees grow, we can estimate the effect of the soil covering on woodland regeneration by recording the soil types in which the different species of tree seedlings have been found (see fig. 1). Thus ash only regenerates naturally on the least

acid soils, while oak does not appear to regenerate naturally on soils below pH 3.8. Birch seedlings (and also those of pine) occur naturally on even the most acid of these soil types. While the range of oak and birch seedlings on less acid soils may be greater than is shown in the diagram, in general there is evidently good agreement between the effects of the soil types on ground vegetation and on tree seedlings.

The second point of interest is that heather moor occurs on soils which are not distinguishable in soil characters from those on which hair grass and bilberry occur. (A similar resemblance is shown by Crump's measurements (1913) of

pH			SOIL TYPE
3	3.8	5	
"MOR"		"MULL"	STRONGLY OXIDISING eg. WOODLAND SOILS
	CALLUNA MOOR		
COTTON- GRASS MOOR	DAMP MIXED MOORLANDS	TRANSITIONAL TYPES~ ?"BOGS"	FEEBLY OXIDISING
		SUBAQUEOUS MUDS AND PERMANENTLY WATERLOGGED SOILS	FEEBLY REDUCING
			STRONGLY REDUCING

Fig. II

relative humidity for heather moor and woodland soils.) The absence of trees from heather moor thus appears to be due to conditions other than those of the surface soils, and the evidence emphasises the probability that *Calluna* moor arose from the bilberry-hair grass types of woodland on destruction of the trees. The ability of both pine and birch to regenerate naturally on heather moor under certain unspecified conditions is equally suggestive of an essential similarity in soil type. From this point of view the presence of birch and occasional pine wood below the Pennine peat in many places is very suggestive as to the soil conditions which existed before the peat formation began.

One other set of problems in these soil types merits attention. It was pointed out many years ago by P. C. Muller

that two main soil types could be distinguished in continental forests. These types he called 'mull' and 'mor' (or *duff*). *Mull* is generally an open 'leaf mould' type of soil, characterised by species requiring nitrates (*e.g.* Cocksfoot grass, *Dactylis glomerata*, raspberry, *Rubus idaeus*, and nettle) and usually containing earthworms. *Mor* generally possesses a closer, often 'turfy' texture, usually lacks earthworms and is characterised by a vegetation in which ericaceous and other allied species are prominent. Most deciduous forest trees, *e.g.* beech, will only regenerate naturally on *mull*, but this type of soil is usually unfavourable for conifers, which generally grow best on *mor*. More recent work has shown that *mor* is very acid and deficient in bases and it arises in areas where the soil is leached. Its formation is favoured by the destruction of the natural woodland cover. It is clear that, of the woodland soil types mentioned above, the most acid, below pH 3.8, is really an excellent example of *mor*, while the less acid types represent *mull*, this being shown not only in the presence of nitrates—but also from the fact that earthworms are generally present and from the seedling distribution. The further interest of *mull* and *mor* lies in the fact that they appear to be quite different biological systems. Thus bacteria are very prominent in *mull*, so much so that the humus of this type of soil has been described as consisting mainly of the jelly capsules and sheaths of bacterial colonies. In *mor*, however, fungal hyphae predominate, said to be especially those of moulds, of Hymenomycetes and particularly of mycorrhizal forms. Further, there are apparently marked differences in the soil faunas, exemplified by the presence or absence of the typical earthworm species. It will be clear, therefore, that there is here a profitable field for study which appears hardly to have been examined at all in this country.

In outlining these features of woodland soils, consideration has been given mainly to the effects of leaching in the relation between soil and climate. The usual type of transition in the natural vegetation as the altitude increases, from oak wood with such species as ash and dog's mercury to 'dry oak wood' with soft grass, blue bells and bracken and, then higher, soft grass and bilberry merging into heather moor, can clearly be related to the greater rate of leaching in the higher zones. Clearly, however, other factors are present and one of the most important becomes the relation between soil humidity and aeration. We may consider first the extreme cases. In a permanently water-logged soil, the products of organic decay are of an entirely different type to those found in a normally dry and well aerated soil. In the latter case, the materials involved are oxidised to such products as carbon

dioxide, nitrates, and sulphates. In the water-logged soil oxygen is absent, and the products are now such compounds as marsh gas (CH_4), ammonia (NH_3), and sulphuretted hydrogen (SH_2). These soils may be termed 'reducing' soils. (The absence of oxygen will, of course, also affect root growth as well as the population of bacteria and fungi.) It has long been recognised that between these extreme types of soil there may well be intermediates in which oxygen is deficient though not entirely absent. Such soils would be 'feebly oxidising.' Until recently, however, no method was available by which these soils might be recognised. Now an electrical method of studying the problem is possible (Pearsall, 1938) by measuring what is known as the oxidation-reduction potential. We can easily distinguish highly 'oxidising' from 'reducing' soils and can demonstrate the existence of a class of 'feebly oxidising' soils in which oxygen must normally be deficient. It may be of interest to record that the first soils definitely recognised as belonging to this type were samples from the Pennine cotton grass moors. In contrast, the soils from typical heather moors are strongly oxidising in summer and are not distinct from those of acid woodlands in this respect. There is, therefore, from this evidence, no reason to regard them as deficient in oxygen, though we must assume that the cotton grass peats are insufficiently aerated. This distinction is quite in agreement with the evidence derived from their relative humidities (see Crump, 1913) as well as with the climatic evidence. These cotton grass moors develop, in short, in climates where the rainfall is sufficiently high in summer to prevent the drying out and aeration of the surface soils. Such a type of soil cannot develop on steep slopes, where heather or hair grass will usually be found, the latter apparently often where the surface is not stabilised. On the summits of ridges and on the edges of peat hags in the cotton grass moor, bilberry is dominant. All these places have soils which are freely oxidising, because the moisture can be rapidly drained away and air can enter. Where the cotton grass peat has been eroded and redistributed, the mat-grass, *Nardus*, is usually dominant and the soils oxidising. A typical series of results is given in the table, for summer samples.

Of particular interest is the high acidity of the cotton grass peats. This feature is the one which distinguishes typical cotton grass moors where there is little else except the two *Eriophorum* species, from the mixed damp moors on which occur mixed communities usually including some *Sphagnum*, *Erica tetralix*, some *Calluna* and other moorland species. The soils in such cases appear invariably to be less acid and *Eriophorum vaginatum* appears to be confined to

soils below pH 4. Other plants, such as *Myrica gale* have only been observed on soils above this pH, and even *Erica tetralix* has not been seen on soils below pH 3.5. Thus the cotton grasses seem to be almost alone in their ability to maintain themselves on the very acid and oxygen deficient soils.

Finally, in drawing attention to these types of soil, I wish to point out that a very valuable field of work is now available

SOILS FROM MOORS ABOVE STANDEDGE

Plant Community	pH	Oxidation-reduction potential at pH 5*	Remarks
<i>Eriophorum vaginatum</i>	{ 3.03	333	} Usually slightly oxidising
	{ 2.95	365	
<i>E. angustifolium</i>	{ 3.05	260	} Reducing-waterlogged
	{ 2.80	463	
<i>Vaccinium Myrtillus</i>	{ 3.12	403	} Strongly oxidising
	{ 3.30	384	
<i>Nardus stricta</i>	3.30	384	Oxidising
<i>Deschampsia flexuosa</i>	3.58	429	Strongly oxidising

* In millivolts

for those interested in fungi and in the smaller animals. The fungi and the animals found on these soils are practically unknown in this country, so that given a nodding acquaintance with less than a dozen common plants, any one interested in the simpler organisms could make very valuable contributions to ecology and forestry by compiling lists of the species characteristic of these plant communities and soils.

REFERENCES

- Crump, W. B. Coefficient of Soil Humidity. *New Phyt.*, 12, 1913.
 Moss, C. E. *Vegetation of the Peak District*, Cambridge, 1913.
 Pearsall, W. H. The Soil Complex in relation to Vegetation. *Journ. Ecol.*, 25, 1938.
 Smith, W. G. and Moss, C. E. Geographical Distribution of Vegetation in Yorkshire I, Leeds and Halifax District. *Geogr. Journ.*, 21, 1903.
 Woodhead, T. W. Ecology of Woodland Plants in the neighbourhood of Huddersfield. *Journ. Linn. Soc., Bot.*, 1906.

NEWS FROM THE MAGAZINES

The Entomologist's Record for December contains 'Generic Names, etc., of the British Formicidae,' by H. Donisthorpe; 'Notes on collecting, etc.,' 'Current Notes,' 'Obituary. The Right Hon. Lord Rothschild,' and supplements, 'The British Noctuae and their varieties,' by H. J. Turner, and 'Variation of Butterflies in Anterior Asia and Morocco,' by R. Verity.

The Entomologist for December contains '*Catocala fraxini* L., a new British record of capture and breeding,' by E. A. Cockayne, C. N. Hawkins, F. H. Lees, Sir B. Whitehouse, and H. B. Williams; 'A new subgenus and three new species of *Polyrhachis* Smith,' by H. Donisthorpe; 'Two remarkable new Mallophagan genera from the Columbidae,' by T. Clay and Col. R. Meinertzhagen; 'New species of *Cyllæpus* from Brazil (Coleoptera, Dryopidae),' by H. E. Hinton; and numerous notes and observations.

THE ECOLOGY OF PERENNIAL RUST FUNGI

JOHN GRAINGER AND CHARLES RIDGWICK

SEVERAL Rust Fungi, of which *Uromyces ficariae* Lév. and *Puccinia fusca* Wint. are examples, produce a mycelium which ramifies within the host plant, and remains within the perennating portions from year to year. Thus the mycelium of *Uromyces ficariae* spends the winter in the tubers of the celandine, and that of *Puccinia fusca* in the rhizomes of the wood anemone. Growth of the host in spring is accompanied by extension of the fungus, which finally produces a modicum

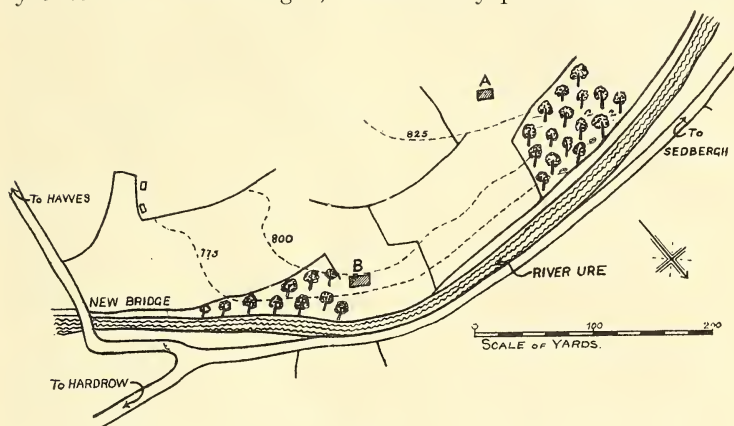


Fig. I

Sketch map to show the position of plots A and B, near the New Bridge at Appersett, Hawes.

of spores, but never kills its long-suffering host. The distribution of such perennial fungi is quite irregular; the diseases appear extensively on patches of the host in one place, and are absent from neighbouring parts, unless the host extends continuously through the whole area under observation. Thus in Dean Clough, Netherton, Huddersfield, the celandine occurs in patches separated by forty yards or more of woodland; *Uromyces ficariae* has appeared regularly upon two patches during the last four years, but four other patches have remained healthy for the same period of observation. The Union's Whitsuntide Excursion to Keld, in 1937, provided a contrast where the banks at the sides of the lane from the village to East Gill Falls were covered with celandines. No greater space than about two feet occurred between any two plants, and *U. ficariae* was distributed freely throughout the whole distance, approaching a quarter of a mile, where the celandine maintained this close formation. The fungus did not attack every plant, but diseased leaves could be found in any square yard.

Similar observations were made at the Whitsuntide Excursion to Hawes, in 1936. *Puccinia fusca* was common upon anemone plants growing at frequent regular intervals of a few feet, in a wood near the New Bridge at Appersett. Open pasture beyond had patches of anemone separated by 50 to 80 yards from each other, and here the patches were either completely healthy or severely diseased. Two areas were specially marked; one was attacked by *P. fusca*, while the other, lying 160 yards north-east from the first plot, was quite healthy.

Mycologists have laid great importance upon the spore-content of the atmosphere as a factor in the distribution of micro-organisms. Various kinds of rust fungus spores have been obtained from the upper air. Thus Stakman, Henry, Christopher and Curran¹ collected rust spores at various heights, even over 10,000 feet. Uredospores caught at 7,000 feet germinated readily, and a group of 60 smut spores was also found. Güssow² found spores of wheat rust in large numbers at a height of 5,000 feet, and 300 miles from the nearest wheat region. Fewer spores were caught at 14,000 feet. Procter³ examined the fungi and bacteria in the air, to a height of over 20,000 feet, but did not get any rust spores. Maclachlan,⁴ however, proved that the basidiospores of *Gymnosporangium* sp. could live for many days at a height of 2,000 feet, while Mehta⁵ showed that an annual distribution of uredospores of *Puccinia graminis* took place from the Himalayan foothills to the wheat areas of the plains of India.

Teleutospores are probably too large and heavy to form an appreciable part of the spore content of the atmosphere. They seem to be distributed only by winds of considerable velocity, and are then transported for relatively short distances. The basidiospores which are produced by teleutospores, are, however, commonly found in the atmosphere. Some of them must fall to the earth, or be washed down by rain, and it would seem that the problem of parasitic fungus ecology would be to find some physiological variation of the host plant which would either allow, or inhibit, attack. There is, on the other hand, strong presumptive evidence from the field observations mentioned above, that the spore equipment of the fungi under investigation is at no stage very mobile. Two methods were used to elucidate the problem; teleutospore-bearing material was transplanted from the diseased plot of anemone at Hawes to the healthy plot, and analyses were made of several physiological and edaphic factors affecting the two areas.

EXPERIMENTAL WORK

The relative location of the two plots at Appersett, Hawes, is shown by the sketch-map (Fig. I), A being the diseased plot,



Fig. II

(Above) Healthy leaves of anemone.

(Below) Leaves of anemone with teleutosori of *Puccinia fusca*.

Both from Appersett, Hawes, and photographed to the same scale.

and B the healthy one. Both were on the same slope, which fell to the River Ure, and Plot A was slightly higher, and to the south-west of B. A more perfect setting for the transmission of spores by the prevailing south-west wind could hardly be imagined. Such movement, had, however, evidently not occurred.

A rectangle 10 yards by 5 yards was measured on each plot, and every leaf in both areas was passed under review, with the kindly help of Mrs. and Miss Grainger. Counts of the average numbers of leaves and flowers in random square yards, were also made. The results are given in Table I.

TABLE I

PLOT	No. of diseased leaves	No. of leaves Av. per sq. yd.	No. of flowers Av. per sq. yd.	% flowers of leaves
A (with disease)	486	294	30	10
B (healthy)	Nil	365	16	4.39

The greater tendency to flower on Plot A might be taken as an indication that the habitat favoured the production of more carbohydrate than Plot B. This difference might also control the fungus, if it were of sufficient magnitude. The investigations described below, however, indicate that this was not the case.

There were ecological indications that Plot B was a good deal moister than Plot A. *Juncus conglomeratus* appeared on B, with *Carex Goodenovii* and Tormentil, while A was conspicuous for its *Festuca ovina* and *Stachys betonica*. There was also a definite mat of turf on A, but none on B.

Samples of soil were taken from both plots, and yielded the data portrayed in Table II.

TABLE II

PLOT	pH	Water cont. of habitat, per cent.	Org. matter content per cent.	Coarse Sand per cent.	Fine Sand per cent.	Silt per cent.	Clay per cent.
A (with disease)	5.5	30.3	10.6	62	27	10	Trace
B (healthy)	6.0	35.5	9.9	56	20	15	8

The soil characters of both plots were thus similar, with the exception of the wetter habitat of Plot B.

Healthy leaves were next taken for analysis. A large number was picked, and then 24 were selected to show as little variation as possible in size and shape between each lot. Their leaf-stalks were removed, and the blades were dried immediately at 98°C. for two hours, in a double pan heated

in the field. They were subsequently dried to constant weight at 65°C. in a drying oven. Estimations of the carbohydrates were performed upon the dried, powdered material, using the picrate method of Willaman and Davidson.⁶ Soluble sugars were extracted with 95 per cent. alcohol, employed at the rate of 100 c.c. per gram of dry material. The residue was heated to boiling temperature with 3 per cent. sulphuric acid, for three hours, and after neutralisation, filtering and standardisation of volume, the liquid was used for estimation of the insoluble carbohydrates, again with the picrate method. Nitrogen estimations were made by the micro-method of Pregl⁷; the soluble fraction was obtained by evaporating to dryness 10 c.c. of the alcoholic extract mentioned above, whilst the total nitrogen was estimated upon a weighed portion of the original dried and powdered leaf material. The results shown in Table III were obtained.

TABLE III

PLOT	Insol. constituents	Total soluble Sugar	Reducing Sugar	Insol. carbo-hydrate	Total nitrogen	Soluble nitrogen	C/N ratio (soluble)
A (with disease)	27.66	30.66	20.13	12.99	3.11	0.57	53.75
B (healthy)	24.31	26.43	19.43	17.92	2.17	0.50	52.86

All figures, except the carbohydrate-nitrogen (C/N) ratio in the last column, are expressed as percentages of the dry weight.

These results give no differences of magnitude sufficient to explain the observed distribution of the fungus. The largest difference between A and B, namely that of insoluble carbohydrates, is less than 5 per cent. An essential similarity of metabolism is shown by the close agreement in the ratios between soluble carbohydrates and soluble nitrogen (C/N ratio).

The transplantation of diseased plants to the healthy plot gave definite results. A piece of turf containing four affected leaves was removed bodily by means of a trowel, care being taken not to injure the rhizomes. This was planted in the healthy area on June 11th, 1936. Its position was marked in relation to permanent objects, and no difficulty was experienced in finding it again on May 18th, 1937. Three diseased leaves then appeared, but search revealed three other infected plants, one 2 ft. 3 in., another 5 ft. 9 in., and a third 9 ft. away from the original source of infection. No further incidence of the disease could be observed in the whole of the plot. There could be no doubt of the complete health of all plants in this area in the previous year, since each leaf was examined individually.

It appears from these experiments and field observations that the spores of *Puccinia fusca* cannot spread more than a few feet from an infected plant. Hosts which are apparently qualified by habitat and metabolism to be susceptible to attack by this fungus cannot become infected unless a source of the disease occurs at no greater distance than about 9 ft.

It is usual for teleutospores to produce basidiospores, which bring about the actual infection. Williams⁸ has recently reported that the basidiospores of a *Phragmidium* rust of the rose are only produced after exposure to winter conditions, and then only for a short time during May. This rust has a more complex life-history than *P. fusca*, but its basidiospores apparently play a considerable part in distribution. It may be that in addition to a large mortality of teleutospores, the lack of wind or the presence of rain during the brief life of the basidiospores, may provide other hazardous factors.

REFERENCES

- ¹ Stakman, E. C., Henry, A. W., Christopher, W. N., and Curran, G. C., *Jour. Agr. Res.* 24, pp. 599-606, 1923.
- ² Güssow, H. T., *Dom. Canada Dept. Agr. Div. Bot. Rept.*, 1931-1934, 1935.
- ³ Procter, B. E., *Proc. Amer. Acad. Arts. and Sci.* 61, pp. 315-340, 1934.
- ⁴ MacLachlan, J. D., *Jour. Arnold Arboretum* 16, pp. 411-422, 1935.
- ⁵ Mehta, K. C., *Ind. Jour. Agr. Sci.* 3, p. 939, 1933.
- ⁶ Willaman, J. J. and Davidson, F. R., *Jour. Agr. Res.* 28, pp. 479-488, 1924.
- ⁷ Pregl, F., *Quantitative Organic Micro-analysis*, London, J. & A. C. Churchill, 1924.
- ⁸ Williams, P. H., *Ann. Rep. Cheshunt Res. Stn. for* 1935, p. 41, 1936.

NEWS FROM THE MAGAZINES

The Entomologist's Monthly Magazine for December contains 'Synonymy of the Cerambycidae of New Zealand (Col.)', by K. G. Blair; 'Investigations on Beetles associated with Carrion in Pannal Ash near Harrogate,' by R. R. U. Kaufmann; 'A Preliminary List of the Coleoptera of Windsor Forest,' by H. Donisthorpe; 'The Parasites of British Birds and Mammals. XVII. A Bibliography of the Previous Records of Nycteribidae together with additional Records and Notes,' by G. B. Thompson; 'The occurrence of rare insects in well-worked localities,' by G. V. Hudson; and two shorter notes.

My Garden for January begins a new volume (vol. 13). It is well up to the high standard of earlier numbers and includes articles on 'Vegetables in Relation to the Hay Diet,' by E. S. Rohde; 'Garden Remedies and Recipes,' by W. E. Johns; 'Untouchable Perennials,' by Robert Ferguson; and 'Planning the Herbaceous Border,' by G. C. Taylor. There are about a dozen other good articles and the two coloured pictures are of snowdrops and *Primula hirsuta*, both good.

RECORDS

THE PHARAOH ANT IN SCARBOROUGH

I HAVE lately had sent to me specimens of *Monomorium pharaonis* L., which is infesting a warehouse in Scarborough in great numbers. Donisthorpe (*British Ants*, 2nd edition, 1927, pp. 102-9) records Hull, Middlesbrough and Leeds as Yorkshire localities. Mr. W. J. Clarke informs me that he has also taken it in numbers at York, and I have a record from Whitby. Donisthorpe (*t.c.*) says that it is almost impossible to get rid of it when once it has become firmly established.—GEO. B. WALSH, Scarborough.

BLACK GROUSE NEAR YORK

A YOUNG black-cock was brought to me to identify, and which had been shot at Beningbrough by Mr. Councillor C. F. Oliver, of York, on December 21st, 1937. Unfortunately, the bird had been mauled by the dog and was too badly torn to preserve. RED GROUSE have been reported from Green Hammerton, Sutton-on-Forest, Bransby, Strensall, Escrick, and Fulford, but it is many years since the former species have been driven to the lowland districts by stress of hard weather such as that experienced early in December.—SYDNEY H. SMITH, J.P., F.Z.S.

PSOCOPTERA NEW TO YORKSHIRE

IN addition to *Peripsocus alboguttatus* Dalm. recorded in *The Naturalist*, 1937, p. 254, I have recently taken three other species of Psocoptera which are additions to the county fauna.

Elipsocus consimilis McL. was taken plentifully in the woods at Wyming Brook (Sheffield), V.C. 63, on various dates between 11/8/37 and 22/9/37, and also in the Ramsdale Woods (Robin Hood's Bay), V.C. 62, 29/9/37. The species occurs on Larch and Scots Fir, and is very similar to *E. cyanops* Rost., but differing strikingly in the brown pigmentation of the dorsal surface.

Caecilius fuscopterus Latr. This very characteristic species was beaten from Hawthorn at Robin Hood's Bay, V.C. 62, 6/10/37. Though actually obtained from the hedge, I think it may have come from a large Oak overshadowing it, as I have taken the species on Oak in the Isle of Wight.

Stenopsocus stigmaticus Im. & Lebr. occurred plentifully in several localities in the Robin Hood's Bay district in the early part of October, such as Ravenscar, V.C. 62, from 4/10/37 to 14/10/37, where it was beaten from Oak, Ivy, and Holly. It differs in important respects from the more usually taken *S. immaculatus* Steph. but especially in the vivid

green colour of the abdomen, and of the pterostigma.—JAMES M. BROWN, Sheffield.

SIPHONAPTERA

VERY little appears to have been written regarding Fleas in the many lists of the Fauna of Yorkshire. This note is written in the hope that other collectors will publish records of their captures and so bring the County List up to date. Many of these creatures are common and we can find them in all sorts of unexpected places. In Whitby and District no special effort has been made to collect Fleas, the following list being those which have been picked up whilst collecting other Insecta. All records are for V.C. 62 :—

- Pulex irritans* L. Whitby, 2/1/35, H.B.
Archaeopsylla erinacei Bouche. Mulgrave Woods, 6/6/35, H.B.
Ctenocephalus canis Curt. Whitby, 3/5/35, H.B.
C. felis Bouche. Whitby, 7/5/35, H.B.; 9/5/35, H.B.
Spilopsylla cuniculi Dale. Mulgrave Woods, 10/6/35, H.B.; Kettle-
 ness, 1936, A. Walker; Whitby, 6/3/37, A.W.
Ceratophyllus gallinulæ Dale. Whitby, 9/5/35, H.B.
C. hirundinis Curt. Whitby, 3/8/36, H.B.
C. garei Roths. Goathland, 6/7/35, H.B.
C. gallinæ Schrank. Whitby, 1/3/36, H.B.
C. penicilliger Grube. Sleights, 6/10/35, H.B.
C. Walkeri Roth. Sleights, 6/10/35, H.B.
Ctenophthalmus agyrtes Heller. Sandsend, 26/4/36, H.B.
C. agyrtes var. *nobilis* Roth. Sandsend, 26/4/36, H.B.
C. agyrtes var. *celticus* Jord. and Roths. Sleights, 6/10/35, H.B.
C. bisectodentatus Kolen. Sandsend, 26/4/36, H.B.
Palaeopsylla konauti Dampf. Sandsend, 26/4/36, H.B.
Rhadinopsylla pentacanthus Roths. Sandsend, 26/4/36, H.B.
Hystrichopsylla talpæ Curt. Sleights, 6/10/35, H.B.; Whitby, 24/11/35,
 H.B.; 8/11/36, H.B.; Sandsend, 26/4/36, H.B.; 29/3/37,
 H.B.; Uppang, 6/11/37, H.B.

H. BRITTEN.

PLATYARTHURUS HOFFMANNSEGGII BRANDT.

WHILST examining an ant's nest recently I noted a good many of this small white 'Woodlouse.' As the distribution of this small creature is not fully known in Yorkshire, I thought the records from the Whitby area may prove of interest to students of 'Terrestrial Isopoda.'

- Uppang, 17/3/34, H.B. In nest of *Acanthomyops flavus* F. V.C. 62.
 Newholm, 23/3/34, H.B. In nest of *A. flavus* F. V.C. 62.
 Grosmont, 4/4/34, H.B. In nest of *A. flavus* F. V.C. 62.
 Uppang, 16/5/37, H.B. In nest of *A. nigra* L. V.C. 62.
 Uppang, 6/11/37, H.B. In nest of *A. flavus* F. V.C. 62.

This last nest was of particular interest as some fifty or more fully winged females and a similar number of males of the ant were present in the nest. The nest itself was situated against the side of a house.—H. BRITTEN.

BEETLES IN 3-PLY BOARD

ROSSE BUTTERFIELD

SOME beetles emerged from 3-ply board in a new dwelling-house, Riddlesden, Keighley, in early September and a larva, probably third year, was found in a burrow in the door board. I sent the insect to Mr. E. G. Bayford who writes :—

I had no difficulty in running your insect down. It is *Hylotrupes bajulus* L. ♀. At one time fairly common, it is now rare in this country. Stephens (*Ill. Brit. Ent. Mand.* IV., 246, 30th November, 1831), says : 'Frequent in the vicinity of old posts and rails in the metropolitan district ; very injurious to the fir rafters of houses, as I have myself experienced. Frostenden Hall, Suffolk, W. C. Hewitson, Esq., Epping, Mr. Doubleday.'

Fowler (*Col. Brit. Is.*, IV, 222, 1890) after 'rare' gives various localities from which it has been recorded and adds, 'I have specimens in my collection taken by Lady Maryon Wilson about the year 1795 ; this lady appears to have been one of the first of our British collectors.' On the Continent it is one of the commonest species, and is, moreover, one of the most destructive.

Reitter (*Fauna Germanica*, Käfer, IV, 41, 1912) says it is found in, and near houses, where the larvæ feed on the dead wood of the roof-timber doing enormous damage. It is sufficiently common to have acquired the name 'Hausbock.'

Planet (*Les Longicornes de France*, 1924, p. 219) says the larvæ does damage to coniferous trees, but unfortunately it is not found only in the trees themselves, but attacks equally the dead wood, particularly telegraph poles, which often it destroys entirely.

He draws attention to the great variability in size, ranging from 8-20 mm. in length ; yours is quite an average specimen.

FIELD NOTE

Reported Monster Trout at Settle.—It was widely reported in the press that a monster Brown Trout had been found embedded in the mesh of the water-grill at King's Mill, Settle, on November 5th. It weighed 13 lb. and was 3 ft. in length, and was an easy record for this district ! Upon enquiry on the spot a few days later I learned from Mr. R. B. Sturdy (Hon. Treasurer of the Settle Naturalist and Antiquarian Society) who had seen the fish, that it was not a Trout at all, but a Salmon ! Incidentally, there were more Salmon in the Ribble last November (1937) than for several years.—H. B. BOOTH.

REVIEWS AND BOOK NOTICES

The Food of North Sea Herring, 1930-1934, by R. E. Savage. Min. Agric. and Fish. Fishery Investigation. Ser. 2 : XV. No. 5. 3s. net. H.M. Stationery Office. The main interest of this paper is that most of the results were obtained from the Shields area, the principal feeding ground of herring in English waters. The author makes allowance for size of the various food organisms and shows that, by volume, the most important food constituents in the Shields area are, in order, the copepod, *Calanus finmarchicus*, then fish post-larvæ (*Ammodytes* spp.), and lastly, Schizopods. Actually, an early spring maximum of *Calanus*

indicates a good herring season there. Comparison is made with the Northern North Sea area where the most important food constituent is the Ascidian, *Oikopleura*, then *Calanus*, then *Ammodytes* post-larvæ. Estimates show that the total landing of herrings per year at Shields is directly proportional to the total volume of food in the stomachs. Feeding curves and seasonal distribution of food in the sea are also given and it is suggested that herring feed mainly by night when the plankton rise to the surface.

A Sparrow-hawk's Eyrie, by **W. W. Nicholas**, pp. xviii+75, with 23 photographic illustrations. A. Brown & Sons, 7/6. For many years there has been no dearth of new books on natural history and ornithologists have been particularly well catered for. Unfortunately, many of the recent books about birds have been of the discursive 'chatty' variety written round a series of photographs often having no relation to one another. The work under review is not one of this type. It is a serious and most valuable contribution to the science of ornithology and will be read with great interest by all serious bird-men and indeed by all real naturalists. Mr. Nicholas proves conclusively that it is well worthwhile to make an intensive study of one species and his memoir may well serve as a model of how this kind of thing should be done. The book is admirably produced and we should like to congratulate our publishers on turning out such a beautiful piece of work. If one may venture on a minor criticism of a small point we would suggest that the title of the picture on the dust cover is out of keeping with a scientific essay. An excellent photograph of two young hawks is described as 'Two young hawks hold a serious consultation.'

The Sky's Their Highway, by **Kenneth Williamson**, pp. viii+396, with 8 illustrations in woodcut by **C. F. Tunnicliffe**. Putnam, 10/6. This, a charmingly written book, by a young writer who is not only fond of wild life but is a keen and accurate observer. All his accounts of the doings of birds are obviously first-hand and they are written in a very pleasing style. The reviewer thinks it a great pity that Mr. Williamson speaks of the tawny owl as 'Nyctalops,' the song-thrush as 'Philomel,' and so on. There seems to be no reason for this, and it is rather irritating to read of 'Nisus' and 'Windhover,' etc., when the ordinary English names would have conveyed the author's meaning at least as well. During the last few years, a number of natural history books have appeared with woodcut illustrations. Quite a number of such illustrations have been bad representations of the creatures portrayed and apparently quite useless to the naturalist. The same cannot be said of those in this book. They are uniformly excellent. The artist has caught characteristic attitudes with great skill and the printing of the cuts is extremely good.

The Way of Birds, by **R. B. Talbot Kelly**, pp. 136, with 72 illustrations in colour and black and white by the author. Collins, 25/-. Captain Kelly is the art master at one of our great public schools. His consummate skill as a painter of birds is quite beyond dispute, and in this beautifully printed and dignified volume he has brought together a fine collection of his drawings of birds. The keynote of the work may best be expressed by quoting one or two of the author's own words. They are as follows: 'Colour is the least stable clue in the identification of birds.' This statement will, we feel sure, meet with the entire approval of all ornithologists. We are all aware of the difficulties which confront the beginner who provides himself with a brightly and accurately illustrated book of birds only to discover that he will rarely encounter a bird in such a position that identification can be made by reference to the coloured picture. In the field, birds are recognised by characteristic

poses, peculiarities of flight—singly and in flocks—and of course by their voices. Captain Kelly has the rare knack of capturing the shape of the living bird whether flying or feeding or at rest. Bearing these points in mind we have never seen better drawings of birds. Some of them are so good that a mere silhouette would be sufficient to enable the ornithologist to name the exact species. It need hardly be said that the printing throughout is fine and the mere turning of the pages gives keen æsthetic pleasure. The book opens with a lengthy and erudite essay on the flight of birds but the bulk of the volume is rightly taken up with the illustrations, each of which is accompanied by a short but ample explanatory note. We earnestly hope that Captain Kelly will publish more of his drawings.

Tropical Aquariums, Plants, and Fishes, by A. Laurence Wells, pp. 160, with 35 illustrations in the text. Warne, 3/6. This is a capital little book for the aquarist who aspires to the keeping of a warm tank. The author knows what he is talking about and gives very sound advice on the building up of a good aquarium, stocking it with plants and keeping it heated and aerated. There is a useful chapter on fish ailments and their treatment and a comprehensive list of suitable fish.

CORRESPONDENCE

To the Editors of *The Naturalist*.

DEAR SIRs,

A QUESTION OF NOMENCLATURE

What is an *animal*? Has our ever-changing language now reached a point when it is perfectly correct to exclude from the term *animal* all non-vegetable organisms that do not walk on all-fours? Again and again I read in *The Naturalist* about "birds and animals." I cull from two issues the following expressions:—

- (1) 'Very few insects or animals';
- (2) 'birds and a few animals.'

If these expressions are correct, let us hear of it (No! not from the B.B.C. "authorities"!). General usage almost implies the correctness; but it is offensive to some ears, including those of

Yours faithfully,

D. W. BEVAN.

To the Editors of *The Naturalist*.

DEAR SIRs,

The following species are recommended by the Scientific Committee of the British Trust for Ornithology for study by local societies in 1938. In each case any available information as to increases or decreases in recent years (with approximate dates) should be given, and it is hoped that it will also be possible to provide answers to the questions given below.

REED-WARBLER

1. If it occurs in your district is it found in other habitats than reed-beds? If so, define these as accurately as possible.

2. Do you find it regularly distributed in all apparently suitable reed-beds, or do you find it concentrated in colonies in some and less or none in others?

3. Is it parasitised by the Cuckoo in your district?

TURTLE-DOVE

1. If it occurs in your district define as accurately as possible the types of habitat in which it is found.

2. Do they frequent your district equally in the breeding-season and late summer?

TUFTED-DUCK

1. Does it breed in your district? If so, give names of waters and approximate numbers of pairs.
2. On what waters does it occur in winter?
3. Do the sexes occur in unequal proportions in winter? If so, state approximate proportion of males to females.

Yours faithfully,

W. B. ALEXANDER.

To the Editors of *The Naturalist*.

SIRS,

At a General Meeting of our Association on November 25th three schemes were brought forward :—

- (1) A scheme of nest adoption ;
- (2) An enquiry into the possibility of Starlings spreading Foot and Mouth Disease ;
- (3) A widespread enquiry into the food of our birds of prey.

A number of our birds of prey are faced with the risk of extermination owing to their nests being robbed every year by egg-collectors and, to a certain extent, by the birds being shot by gamekeepers and others.

First of all, we shall approach the owners of estates and the lessees of shoots and ask their permission for making an arrangement with their gamekeepers for the protection of these birds. There should be no difficulty about this as the birds that we have in mind are so rare that the harm they do to game is infinitesimal. The gamekeepers would be asked to protect these nests, and they would receive a certain sum of money when the young left safely. We would arrange for one of our members to visit each nest at the vital time and to report progress. Members of the public who wish to adopt a nest could choose the species which they most wished to protect, and arrangements could be made for them to visit the nest just before the young were ready to fly. If any of your readers are interested in this scheme, will they please communicate with Mr. Robert Blockey, of the Educational Museum, Haslemere, Surrey?

Rightly or wrongly, birds have been blamed for the introduction of Foot and Mouth Disease into this country. If birds are responsible, Starlings, from their habit of associating with sheep and cattle, are undoubtedly the culprits. We are anxious to settle this point as soon as possible, as otherwise we fear that there may be an indiscriminate destruction of our immigrant birds, including Fieldfares, Redwings, etc. We have suggested to those engaged in investigating Foot and Mouth Disease experiments which will decide whether it is possible for Starlings to spread this disease.

By collecting pellets, thrown up by birds of prey, from all parts of the country, and having them analysed, we hope to prove that the majority of these birds are more beneficial than harmful to game preservers. To make the test a fair one, these pellets would have to be collected in the breeding season, say from March to July.

Yours faithfully,

N. TRACY, M.B.O.U., *Hon. Secretary*,

The Association of Bird Watchers and Wardens.

The Entomologist's Record for January contains 'The Third Brood of *Heodes (Lycaena) phlaeas* Linn., 1761,' by S. G. Castle Russell ; 'Gynandromorphism in Diptera,' by P. A. H. Muschamp ; '*Crymodes exulis* ssp. *assimilis* in Scotland,' by H. B. D. Kettlewell ; Notes on Orthoptera observed in 1937,' by P. Freeman ; 'Pyralidae and Microlepidoptera collected in Cyprus during 1920 and 1921,' by K. J. Hayward ; 'Notes on Collecting, etc.,' 'Current Notes,' and supplement : 'The British Noctuae and Their Varieties,' by H. J. Turner.

WATKINS & DONCASTER

NATURALISTS,

36, STRAND, LONDON, W.C.2

(Five doors from Charing Cross),

P.O. Box 126.

Telephone: Temple Bar 9451.

Keep in stock every description of

APPARATUS, CABINETS, BOOKS & SPECIMENS

for Collectors of

BIRDS' EGGS, BUTTERFLIES, MOTHS, Etc.

Catalogue (96 pages) sent post free on application.

The EARLY HISTORY *of the* NORTH RIDING

By WM. EDWARDS, M.A.

Demy 4to (9" × 11½"), 283 pages, with 16 plates, frontispiece in sepia, and Map of the North Riding at end. Full cloth 10/6 net, post free 11/0.

Edition de luxe, full leather, gilt top, 21/- net, post free 21/6.

CONTENTS :—I. Prehistoric Times—II. The Romans—III. The Anglican Kingdom of Northumbria—IV. Pre-Conquest Monasteries—V. The Northmen—VI. The Norman Conquest and Settlement—VII. Political History under the Normans and Early Plantagenets—VIII. The Feudal System—IX. The Barons—X. North Riding Castles—XI. Thomas, Earl of Lancaster—XII. The Danger from the Scots—XIII. The Foundation of the Religious Houses (I.)—XIV. The Foundation of the Religious Houses (II.)—XV. The Life and Works of the Monks—XVI. The Wealth and Power of the Religious Houses—XVII. Churches and Chantries in the Middle Ages—XVIII. Town Life in the Middle Ages—XIX. Country Life in the Middle Ages—XX. The Forests—XXI. Early Yorkshire Pedigrees—Index of Place Names ; Index of Personal Names ; Index of Subjects.

The Manchester Guardian says :—"This is a readable, popular history from the New Stone Age to the fifteenth century, with chapters on the feudal system, on the numerous monasteries in the district, and on the daily life of monk and layman in the Middle Ages. In the period to which it relates the Riding was the scene of many foreign invasions and of much civil war, and the author's object has been to show the relation of the local history to that of the nation. The volume contains many illustrations, and the price is astonishingly low for so handsome a work."

LONDON : A. BROWN & SONS, LTD., 5 FARRINGTON AVENUE, E.C.4.
AND AT HULL.

Irish Naturalists' Journal

A Magazine of Natural History, Antiquities and Ethnology.

Published every Two Months by the I.N.J. Committee.

EDITED BY J. A. S. STENDALL, M.R.I.A., M.B.O.U.,
with the assistance of Sectional Editors.

Annual Subscription, 6/- post free. Single Parts, 1/3.

All communications to be addressed to—

W. M. Crawford, B.A., F.E.S., F.Z.S., Hon. Sec.,

Orissa, Marlborough Park, Belfast.

A new work of prime importance to all interested in
Ornithology

A SPARROW-HAWK'S EYRIE

BY

W. W. NICHOLAS, F.R.P.S.

WITH FOREWORD BY

BRIAN VESEY-FITZGERALD, F.L.S., F.G.S.
NATURALIST EDITOR OF *THE FIELD*

xviii + 75 pages and 17 plates. Crown 4to.

cloth **7'6** net

This book, which is profusely illustrated from photographs taken by the author and his friend, forms the study of a Sparrow-hawk's eyrie from the hatching of the eggs to the flying of the young. In his foreword Mr. Vesey-Fitzgerald says :—" Mr. Nicholas has made a most careful study of the bird and he has in this book added very considerably to the sum total of our knowledge. And more knowledge of such birds as this very beautiful hawk is urgently needed."

OBTAINABLE FROM ALL BOOKSELLERS

*A four-page illustrated pamphlet will be gladly sent by the publishers,
free of charge.*

A. BROWN & SONS, LIMITED
5 FARRINGTON AVENUE, LONDON, E.C.4.
AND AT HULL

Printed by A. BROWN & SONS, LTD., Perth Street West, Hull, and published by
A. BROWN & SONS, LTD., at 5 Farringdon Avenue, in the City of London.
February, 1938.

The NATURALIST

A MONTHLY
ILLUSTRATED JOURNAL
PRINCIPALLY FOR THE NORTH OF ENGLAND

Edited by

V. H. PEARSALL, D.Sc., F.L.S., and W. R. GRIST, B.Sc.,
The University, Leeds.

with the assistance as referees in special departments of

H. B. Booth, F.Z.S., M.B.O.U.

J. M. Brown, B.Sc., F.R.E.S.

W. H. Burrell, F.L.S.

Chris. A. Cheetham, F.R.E.S.

W. J. Fordham, M.R.C.S., L.R.C.P., D.P.H.

Riley Fortune, F.Z.S., F.R.P.S.

Professor A. Gilligan, D.Sc., F.G.S., M.I.M.E.

Mrs. Elsie M. Morehouse.

Thos. Sheppard, M.Sc., F.G.S., F.Z.S.

T. W. Woodhead, Ph.D., M.Sc., F.L.S.

Contents

	PAGE
A Black Republic—T. Hyde-Parker	77-81
Records	81-82
A Contrast in Bird Life—John P. Utley, B.Sc.	83-84
Beetles in Bamboo Canes—H. Britten	84
Some Garden Aculeates—W. J. Fordham, M.R.C.S., L.R.C.P., D.P.H.	85
New Vice-County Records for the Genus Seligeria—T. H. B. Bedford	86
Some Derbyshire Caddis-flies—James M. Brown, B.Sc., F.R.E.S.	87-92
Lepidoptera Notes for 1937—Geo. E. Hyde	93-94
Yorkshire Coleoptera in 1937—W. J. Fordham, M.R.C.S., L.R.C.P., D.P.H.	95-98
Ornithological Sketches	98
Reviews and Book Notices	99-100
News from the Magazines	100
The Vegetation of Yorkshire and Supplement to the Floras of the County—(the late) Dr. F. A. Lees—Edited by C. A. Cheetham	101-108

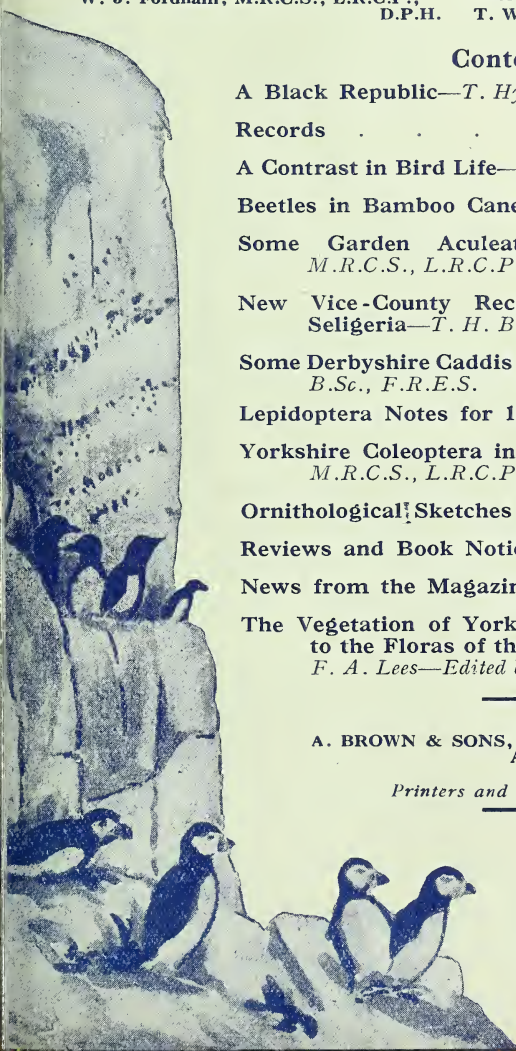
LONDON:

A. BROWN & SONS, Ltd., 5 Farringdon Avenue, E.C.4.
And at Hull.

Printers and Publishers to the Y.N.U.

PRICE 1/6 net.

Prepaid Subscription
15/- per annum.



A new work of prime importance to all interested in
Ornithology

A SPARROW-HAWK'S EYRIE

BY
W. W. NICHOLAS, F.R.P.S.

WITH FOREWORD BY
BRIAN VESEY-FITZGERALD, F.L.S., F.G.S.
NATURALIST EDITOR OF *THE FIELD*

xviii + 75 pages and 17 plates. Crown 4to.

cloth **7'6** net

This book, which is profusely illustrated from photographs taken by the author and his friend, forms the study of a Sparrow-hawk's eyrie from the hatching of the eggs to the flying of the young. In his foreword Mr. Vesey-Fitzgerald says :—" Mr. Nicholas has made a most careful study of the bird and he has in this book added very considerably to the sum total of our knowledge. And more knowledge of such birds as this very beautiful hawk is urgently needed."

OBTAINABLE FROM ALL BOOKSELLERS

*A four-page illustrated pamphlet will be gladly sent by the publishers,
free of charge.*

A. BROWN & SONS, LIMITED
5 FARRINGTON AVENUE, LONDON, E.C.4.
AND AT HULL

A BLACK REPUBLIC

T. HYDE-PARKER

To those who have made any study of bird literature, it may well seem that while much still remains obscure, pretty well all that is known of the Rook has already appeared in print. In view, however, of the fact that the bird's merits, or demerits, have come in for a good deal of discussion of late years, a brief summary, combined with a few personal observations, may not be unacceptable to the general reader.

The Rook in forming a colony has always shown a preference for the proximity of human dwellings, and this not only in the country but in the heart of busy towns. Perhaps Temple Gardens afford our most classic example, and there, as Leigh Hunt says, the rook, 'a grave, legal bird, both in his coat and habits, lived in a community, yet to himself.' Then the late A. H. Patterson, in several of his books, refers to a rookery in the centre of Great Yarmouth; and probably most of us can recall similar instances. In rural districts indeed, the rookery was deemed part of the establishment; so much so that, in some parts, it used to be common, when a death occurred in the house, to inform not only the bees but the rooks also. I wonder how many of my readers have read, or can remember, the pleasing account of this quaint ceremony to be found in Mary Webb's *Precious Bane*.

A rookery has ever been considered an asset to a country house, and where none exists, efforts have frequently been made to induce the birds to form one, though generally without success—indeed, while they will sometimes persist in occupying their old quarters despite discouragement, rookeries have been known to be suddenly and unaccountably deserted. There are certainly few pleasanter sounds, on a mild spring morning, than the contented cawing of a colony of rooks—provided always that it is not too close to the house, for its rather a case of 'Oh, the brave music of a *distant* drum'! One which stands a couple of hundred yards or so from us is just a nice distance. At the Hall here, where rooks occupy many of the trees immediately surrounding the house itself, visitors have been known to complain mildly of noise in the early morning. Thomas Edwards, the 'Scotch Naturalist,' whose researches were perforce carried on mostly at night, and who apparently slept just where it happened, thus describes one of his own experiences: 'I positively do not believe that a single member of that black community slept during the whole of that night. If the hubbub slackened for a moment, it was only renewed with redoubled energy and vehemence.'

Taking all this into consideration, it is scarcely to be wondered at that the rook, though at times confused with the crow, should be one of our best-known birds. Such being

the case, any reference to his colour would appear superfluous ; and yet the rook is not always so black as he is painted ! This is no covert allusion to cases of albinism which occur now and then, but merely to the fact, very evident at close quarters, that his feathers have a fine metallic blue sheen. Furthermore, there is a bare, whitish patch at the base of the bill. This is only present in the adult bird. Some young ones, brought up by hand, did not show it until three months after they were practically full-fledged. Both bill and white patch serve to distinguish it from the carrion crow, whose beak is shorter and more curved—the crow, in fact, being more a miniature raven. In the case of the rook's bill, by the way, I have come across several instances of malformation.

Besides the familiar caw—so distinct from the harsh kaa of the carrion crow—there are other calls, one of which seems to resemble the sound caused by tapping a small empty wooden box with one's knuckles. During courtship may be heard sounds suggestive of a pathetic attempt at song. Doubtless, the fox in the fable chose this season to work off his artful little ruse !

While many birds, when not actively employed on the serious business of life, appear content more or less to rest, rooks, like lapwings, seem to take a positive delight in aerial evolutions. They will spend much of their leisure wheeling round and round above the tree-tops, varying this sometimes by soaring upwards only to come shooting headlong down again. It is fine, too, to watch a flock beating up against a strong wind, or to observe their skill when in pursuit of a prospecting kestrel.

Charles Waterton has remarked that there is 'no bird in England so completely gregarious. . . . In flocks it builds its nest, in flocks it seeks its food, and in flocks it retires to roost.' This is almost invariably the case, and the fact that, in our village here, there has been, for some years past, one solitary nest in a small isolated spinney, is but the exception that proves the rule: And yet the rook republic is by no means a feathered Utopia. Much squabbling goes on at times, and there are certainly flagrant cases of petty larceny in the matter of building material—sometimes followed by prompt reprisals, regarding which W. H. Hudson relates an amusing instance. They even appear to hold a species of court martial in cases of infraction of the social code, with dire results for the delinquent ; but whether summary and condign retribution be really in their mind would be as difficult to confirm as is the apparent posting of sentries. I have sometimes wondered whether the old word 'rook,' meaning to cheat or defraud, really originated in this 'confounding of those pedantic distinctions of *meum* and *tuum*,' as Charles Lamb

has it, or whether it was derived from the bird's swart exterior. The latter inference would be scarcely fair considering that it was owing to this very attribute, combined, perhaps, with a certain dignity of gait, that he was chosen as parson at the obsequies of Poor Cock Robin !

The rookery is, in the winter season, to some extent deserted, especially at night, but in February, and sometimes early in the month if weather be propitious, birds may be observed revisiting their old quarters in some numbers, though there is yet no definite return. Occasionally, indeed, a very mild spell in late autumn or even in winter, induces misplaced confidence,

Sooth'd by the genial warmth, the cawing rook
Anticipates the Spring, selects her mate,
Haunts her tall nest, and, with sedulous care,
Repairs her wicker eyrie, tempest torn.

but unfortunately in such cases, rude awakening is in store. In March, however, things become very busy, what with furbishing up last year's abode, building a new one in the case of young couples, and rebuilding where, as frequently happens, winter gales have completely demolished the old edifice. In their choice of trees, they are fastidious—or else erratic—for, while one may be seen to have seven or eight nests crowded into it, another near by and apparently equally suitable is left severely alone. It has been stated that rooks note the first signs of decay in the upper branches. After a good deal of observation, all I can say is that some of the trees thus scorned and rejected outlive a good many corvine generations ; and, on the other hand, many recorded instances go to prove the popular idea of rooks detecting a decaying tree a mere fallacy.

Unfortunately, owing to the height, much of the rook's domestic economy must perforce be studied at a distance, though, of course, a pair of glasses makes a wonderful difference. ' Through the golden mist of years ' I can see myself, a small boy, scaling dizzy heights in order to investigate the construction, and particularly contents, of these nests. On one occasion at least I remained aloft for what seemed an age, for the simple reason that I daren't come down. Unlike the path to Avernus, it was a case of *facile ascensus*—nor, by the way, in view of its literal meaning, is Avernus particularly appropriate ! Unlike Waterton, *my* climbing exploits practically ceased with boyhood, and it's many a long day since I saw the inside of a rook's nest.

Towards the end of March, birds may be seen winging their way homewards with the pouch under the beak perceptibly swollen. This does not necessarily imply that there are young to be fed, for the male gallantly brings sustenance

to the sitting female. Soon, however, juvenile tones will be distinguishable amid the general clamour, and then one need no longer doubt the presence of hungry, impatient youngsters—who, by the way, will be equally persistent when, later on, and grown as bulky as the adults, they follow them afield, and, fluttering with exaggerated childishness, demand every dainty unearthed by their long-suffering parents.

Eventually, of course, they must fend for themselves, and then large flocks spread over the land. It may be observed that Jackdaws consort with them, both in the fields and at roost. The numerous starlings and plover seem to regard rooks with indifference, save in the breeding season, when the latter strongly resent their presence in the neighbourhood of their nests.

About mid-October, a certain amount of migration, which may be noted on the East Coast, serves to swell the local numbers while it certainly does nothing towards solving the coming food problem. When really cold weather comes along :

The very rooks and daws forsake the fields
Where neither grub nor root nor earth-nut now.
Repays their labour more.

Isolated stack-yards are then put under contribution, and rooks also resort to the sea-shore to pick up anything left by the tide, changing places, in fact, to some extent, with the gulls which, in coastal districts, flock behind the tractor as rooks formerly followed the horse-drawn plough. The rookery is now largely abandoned, and roosting-places sought elsewhere. Why this should be so is not so easy to say, for one would suppose that trees which are considered suitable at one season would, unless exceptionally exposed, be equally desirable all the year round, besides saving the trouble of finding fresh quarters.

I fear we cannot leave this topic without some reference to the rook's diet, which would, unfortunately, seem to have undergone a certain alteration, or rather, extension, during comparatively recent times. Formerly, the bird was decidedly beneficial, and even now it certainly does an immense amount of good by consuming untold numbers of leather-jackets, wireworms and other pests. An incident is related in Ticehurst's *Birds of Sussex*, where a rook, which was serving as a scarecrow, was dissected and found to be entirely crammed with wireworms! On the other hand, and setting aside a vast mass of ignorant and prejudiced 'evidence,' the sum of much painstaking and unbiased investigation goes to prove that the activities of the rook have not latterly been an un-mixed blessing. Now there is no doubt that rooks have increased in numbers. This is due, in the first place, to the practical extermination of their natural enemies, the larger

Accipitres (eagles, falcons, etc.). The game-preserver has seen to this in the past, and any odd survivor is generally accounted for by the ever-increasing army of poultry farmers. In the second place, it may be attributed to the neglect of rookeries on innumerable untenanted estates. Then one has to consider that much of the rook's normal food is now consumed by vast hordes of starlings, aided, no doubt, by gulls which come inland more and more, and, in these parts, practically monopolise the ploughland. The rook, with the adaptability of his tribe, turned his attention in other directions. The reader shall be spared elaborate dietary tables: these may be found, if desired, in Dr. W. E. Collinge's admirable work on *The Food of Some British Wild Birds*. Suffice it to say that some of these fresh ventures are scarcely welcome from the human standpoint.

There need, however, be no question of *bellum ad exterminationem*. Rookeries may be judiciously and humanely thinned; and this should be done in all cases, but especially in districts where it is clearly established that the birds have become too plentiful. Statistics go to prove that those colonies are the most flourishing which are so treated. Meantime, and as touching one point of indictment, it may be added that there are dressings on the market which, while, of course, non-poisonous, seem to render seed-corn singularly unpalatable. By such means, matters may be to a great extent adjusted and the balance restored, while the rook, the blot on his scutcheon erased, will regain his former proud position as 'the farmer's friend.'

RECORDS

ROSE-COLOURED PASTOR NEAR YORK

A ROSE-COLOURED Starling or Pastor was seen on the York-Scarborough main road near to Sandburn on September 20th, 1937, by Dr. Stanley Upton, M.B. (of York). The bird was feeding on horse droppings.—SYDNEY H. SMITH, J.P., F.Z.S.

FUNGI NEW TO YORKSHIRE

AMONG specimens recently sent me by Mr. W. G. Bramley were *Nectria magnusiana* Rehm and its conidial stage, *Dendrodochium epistroma* v.H., parasitic on *Diatrypella favacea* on Birch, Becca Park, Aberford, October, 1937. The conidial stage is generally distributed, but this is the first recorded occurrence of the *Nectria* in England and the second for Great Britain, the previous record being in Scotland. Mr. Bramley has also sent me *Tubercularia minor* Link, on stalks of *Brassica*, Bolton Percy, January, 1937, and *Tubercularia versicolor* Sacc.

on Sycamore, Becca Park, Aberford, October, 1937. *Fusarium roseum* var. *buxi* was collected on leaves of Box at Aldbrough, East Yorkshire, August, 1937.—T. PETCH.

ENTOMOPHTHORA OCCIDENTALIS THAXTER

As recorded in the report of the Fungus Foray at Pocklington in September, 1937 (*The Naturalist*, November, 1937, pp. 284-287), this species was found in Millington Wood, the first reported occurrence in Great Britain. Thaxter found it commonly on an aphid on White Birch (*Betula populifolia*) in Maine, U.S.A. In the present case it occurred on an aphid on Sycamore, and only a single specimen was obtained. Macroscopically, the fungus cannot be distinguished from other species of *Entomophthora* on aphids, but it is readily identified by its conidia. The latter are somewhat similar to those of *E. sphærosperma*, but about double the length, 30-45 × 8-9 microns in the present example.—T. PETCH.

TRICHOTHECIUM OBOVATUM (BERK.) SACC.

THIS species was recorded for Millington Wood, V.C. 61, in *The Naturalist*, November, 1937, p. 287, and there is a previous Yorkshire record for Halifax. Among the peculiarities assigned to this fungus is that of growing on pyrenomycetes, and the Millington specimen grew on *Dialonectria sanguinea*. I have since examined the type specimen in Herb. Kew, and found that it is very poor and shows only minute white dots. Grove, in *Journ. Bot. L.* (1912), pp. 14, 15, stated that it was certain that *T. obovatum* was the young stage of *T. roseum* Link, regarding *T. roseum* Link and *T. candidum* Wallr. as the same species. I would place the Millington specimen as *T. candidum*, but it seems doubtful whether that is more than a colour form of *T. roseum*. The two cannot be separated on the size of the conidia, as given in Saccardo, *Sylloge Fungorum*.—T. PETCH.

BOREUS HYEMALIS L. IN SHEFFIELD

A NEW Yorkshire locality for *Boreus hyemalis* L. can now be added to the six already known for this insect (*Naturalist*, 1937, p. 87), as I have recently found this aberrant member of the Mecoptera in Ecclesall Woods, Sheffield, this being the second recorded locality in V.C. 63. The insects were observed first on January 31st, and again on February 2nd, 1938, in fair numbers among moss on an old moss-grown wall very near the Yorkshire-Derbyshire boundary at various points within a length of about a quarter of a mile along the wall. Both sexes were observed, but females were decidedly in the majority.—JAMES M. BROWN, Sheffield.

A CONTRAST IN BIRD LIFE

JOHN P. UTLEY, B.Sc.

January 6th, 1938.

THE day was clear and bright, plenty of sun and not too cold. I started up Bolton Ghyll from the Castle Bolton-Redmire road. Here the stream runs through country that gives every indication of a good and varied bird life. The timber was about equally divided between Beech, Birch, Larch, Oak, and Sycamore with odd clusters of Pine and Spruce. There was plenty of undergrowth in the form of Elderberry, Briar, Bramble, and Bracken: here and there were patches of wet ground with rushes and large beds full of the stiff grey stems of decayed Willow Herb.

The woodland was diverse, thick in places, but in others quite open. The banks were fairly steep, but were broken by open dells running off at angles to the main stream. The general ascent upstream was continuous and regular, rising from about the 700 ft. contour to 1,500 ft. in the $2\frac{1}{2}$ miles I traversed.

I had gone scarcely more than a hundred yards when a flicker of white ahead caused me to move quickly behind a tree; getting out my glasses I focussed them on an absolutely snow-white Stoat—except for the tail point. He was slipping in and out of rabbit holes and I had him under observation for quite five minutes, and on no part of his coat could I detect a flaw in the white skin. To get so perfect an albino in this district is quite a record.

I moved further upstream but so far had not seen nor heard a bird of any kind. As I climbed over a mound a Heron rose not many yards away from me to come down again higher up. I went on but other bird life was totally absent. Time and again I stopped at vantage points and scrutinised the surrounding district, but neither sight nor sound of bird could I discover. A few times I disturbed the Heron and sent it upstream, till finally it swung high in the air and went back down the dale.

I came to a plantation of very young Larch and hovering above it was my second bird—a Kestrel. He, too, must have found the hunting poor for with quick wing beats he went off to the open pasture lands.

The woodland began to thin out—I was now nearing the 1,250 contour. Soon I had left the trees behind save for a few stunted Hawthorn and Mountain Ash, and after leaving the ruins of the Apedale mines these, too, disappeared.

Though all the open country was clear of snow I was now in a region where the depressions were filled with drifted snow and as I climbed higher these patches of blown snow were about four feet deep: indeed in one place where the torrent had cut through the drift and left a clean, straight

escarpment, I stood on the stream bed but could not touch the edge of the snow face above me.

About the 1,500 contour I turned back and retraced my steps along the edge of the valley cut—where it joins the open moor. Here I set up my third bird—a cock Grouse.

Soon I began to enter the woodland again, and here on the spurs the undergrowth was thick bracken, mostly laid flat by the weight of the snow it had recently borne. Now and again I came across a tree which had been blown down in a previous gale and here the bracken lay over the branches almost bivouac fashion. From one of these shelters out flew my fourth bird, a Woodcock which zigzagged away among the trees.

Surely here on the edge of the woodland I would note some more bird life: a Blackbird, Chaffinch, or a Tit; but no, the whole area was devoid of birds except those already mentioned.

The Heron was back by the stream again for I heard his 'Frak, Frak' down below.

Even the Robin failed me, for not a glimpse did I get of one nor hear a note of his cheery song.

My previous reports of excursions have usually contained a varied assortment of bird life, but here is one of a vastly different nature, and I shall probably be kept pondering for some time on the reason for the absence of birds in what appeared to be almost a sanctuary.

BEETLES IN BAMBOO CANES

H. BRITTEN

WHILST taking a stroll on the sands at Whitby on January 8th I found a large number of bamboo canes at high-water mark, having been washed up by the high tides experienced a few days previously. Examination of a few of these canes revealed the emergence holes of a beetle which I suspected was *Dinoderus minutus* F. This was found to be justified when on splitting a few canes I found larvæ, pupæ, and mature specimens of this beetle drowned in their burrows. Several specimens of *Tribolium castaneum* Hb. were also found, and a specimen of *Tenebroides mauritanicus* L. was obtained in one of the larger bamboos. A more curious find however, was that of a number of specimens of a 'Coccid' which inhabits the cavity of bamboo near the internodes. This proved to be *Antonina bambusae* Mark. This little collection serves as an illustration that no situation or material is too unusual to search for insects, also proving that strange species are often introduced into localities by unsuspected means. I have to thank my father for kindly determining this material also for his interesting notes regarding the 'Coccid.'

SOME GARDEN ACULEATES

W. J. FORDHAM, M.R.C.S., L.R.C.P., D.P.H.

DURING the last few years I have paid considerable attention to the aculeates occurring in my garden, either burrowing in the sandy soil of a raised bank or found on the flowers of Arabis, Aubretia, Flowering Currant, and other plants or on the bushes of Gooseberry, Raspberry, and Currants.

A list of these species may possibly be of interest to other hymenopterists.

- Ancistrocerus pictus* Curt. July on Raspberry.
A. parietinus L. Abundant on Raspberry, etc. June, July.
A. parietum L. On Raspberry. June, July.
Andrena albicans Kirb. Abundant everywhere. April, May.
A. fucata Sm. Raspberry. June. Several, one with darker metatarsus than usual (det. R. C. L. Perkins).
Andrena fulva Schr. Abundant on Gooseberry. Burrows on lawn. April, May.
A. gwynana Kirb. On Arabis. March, April.
A. jacobi Perk. Abundant on Raspberry, etc. April, May.
A. lapponica Ztt. Several in May on Arabis, etc. Probably a visitor from Allerthorpe Common.
A. nigroaenea Kirb. One in May.
A. saundersella Perk. Several males. May, June.
A. sericea Chr. Burrowing in sandy bank. May.
A. varians Rossi. Males in April. New to East Yorks. (V.C. 61.)
A. wilkella Kirb. Abundant. May, June, July.
Coelocrabro leucostomoides Rich. May, June. On Raspberry.
Crossocerus tarsatus Shuck. (*palmipes* auct.). Several in June on Raspberry.
C. wesmaeli V.d.L. On Raspberry. May, June. New to East Yorks.
Halictus calceatus Scop. Not uncommon. April, May, June.
H. fulvicornis Kirb. One female. August.
H. morio F. A female in June. New to East Yorks.
H. quadrinotatus Kirb. A male in August.
H. rubicundus Chr. Abundant, burrowing in bank. May to July.
H. smeathmanellus Kirb. On Arabis, etc. May.
H. tumulorum L. Three females in June.
Nomada flavoguttata Kirb. One. June on Raspberry. New to East Yorks.
N. marshamella Kirb. Abundant with *Andrena jacobi* in April, May, and June on Raspberry.
Omalus auratus L. One on Raspberry. July.
Osmia rufa L. Common on Grape Hyacinth. April, May.
O. ventralis Pz. On Aubretia. May.
Rhopalum clavipes L. On Raspberry. June.
Sapyga quinquepunctata F. Two males on gate post and Raspberry. May, June.
Sphecodes affinis v. Hag. On sandy bank. May.
S. hyalinatus Schk. One female in June. New to East Yorks.
S. monilicornis Kirb. Several. June, July.

I am greatly indebted to Mr. H. M. Hallett for kind help in identification.

NEW VICE-COUNTY RECORDS FOR THE GENUS SELIGERIA

T. H. B. BEDFORD

THE writer has been engaged for some time on an ecological study of the *Seligerias* of the carboniferous limestone. An attempt has been made to study these mosses throughout the whole of the Pennine Range where limestone exposures are to be found. It is hoped in due course to publish a detailed account of the investigations. In the meantime, it may be useful to indicate the following new Vice-County records which have so far been encountered during the course of the work. A record has been deemed new when it has not previously appeared in the publications of the Bryological Society.

Seligeria acutifolia Lindb. var. *longiseta* Lindb.

- (1) Cumberland, V.C. 70, Wild Boar Scar, Cross Fell, 23/9/37.
- (2) Staffordshire, V.C. 39, Apes Tor, Hulme End, 8/10/37.
- (3) County Durham, V.C. 66, Clints Crag, Ireshope Burn, Weardale, 10/10/37.

Seligeria Doniana C.M.

- (1) Cumberland, V.C. 70, Wild Boar Scar, Cross Fell, 23/9/37.
- (2) West Lancashire, V.C. 60, Pot Hole, near Ease Gill Kirk, Leck Fell, 1/1/38.

Seligeria tristicha B. and S.

- (1) Westmorland, V.C. 69, The Coves, Mallerstang, 29/1/38.

The identifications have been kindly confirmed by Mr. H. N. Dixon.

S. acutifolia var. *longiseta* has hitherto been recorded from only three stations in North-West Yorkshire, V.C. 65, and from one station in Mid-West Yorkshire, V.C. 64. It would appear, therefore, that *S. acutifolia* var. *longiseta* is even rarer than *S. tristicha* B. and S. The writer, however, has found *S. acutifolia* var. *longiseta* in ten widely dispersed stations in V.C. 65 and in twenty-one stations in V.C. 64. It is hoped to be able to prove that *S. acutifolia* var. *longiseta*, contrary to accepted opinion, is by far the commonest of the limestone *Seligerias* in Yorkshire.

The writer would be particularly grateful for specimens of *S. acutifolia* var. *longiseta* from West Yorkshire or from elsewhere in the Pennine Range. It is, however, essential for the purposes of the investigation that precise details of locality, etc., should accompany each specimen.

SOME DERBYSHIRE CADDIS-FLIES

JAMES M. BROWN, B.Sc., F.R.E.S.

COMPARATIVELY little work has been done among the Trichoptera or Caddis-flies in Derbyshire, judging from the published records of these insects. In the *Victoria County History of Derby* (1905) a short list of sixteen species is given, and in the various entomological journals few additional references are to be found. While most of these published records refer to Dovedale and its neighbourhood, my own collecting during the past few years—the results of which are embodied in the present communication—has been chiefly carried out in those parts of Derbyshire most easily accessible from Sheffield. This work has been mainly, but not entirely, restricted to stream-sides, hence species whose larval stages are passed in ponds or lakes are largely missing from my list.

My collecting grounds are, in the main, the same as those detailed in my paper on 'Derbyshire Stoneflies' (*Naturalist*, 1936, pp. 62-64), with a few additional ones.

In the following list, I give records of sixty-five species, which number will, no doubt, be considerably increased in the near future.

LIST OF SPECIES

Order—TRICHOPTERA

Family—PHRYGANEIDAE

Phryganea grandis L.

This is one of our largest species, and has been taken only seldom in the county.

Renishaw, 28/7/30. Larvæ were also plentiful.

P. striata L.

A species rather more common than the last.

Beauchief, 20/5/33. Longshaw. Larvæ occurred in the mill-dam at Beauchief, and in the lake at Longshaw.

P. obsoleta McL.

Ringinglow, 23/8/34. Longshaw, 18/8/34. Larvæ were abundant in a moorland pool beyond Ringinglow, around which the adults were on the wing.

Family—LIMNOPHILIDAE

Limnophilus rhombicus L.

A large conspicuous species, and fairly widely distributed.

Lathkill Dale (Alport), 4/34. Old Hay Brook (Blacka Moor), 7/31. Longshaw, 6/7/35.

L. lunatus Curt.

A common and widely distributed species.

Longshaw, 27/7/32, 27/9/33, 18/8/34. Monsal Dale (R. Wye), 17/7/32. Bradford Dale, 8/31, 27/5/33. Lathkill Dale, 8/32, 17/9/32. Hathersage (R. Derwent), 4/10/34.

L. stigma Curt.

Longshaw, 2/5/36. The larvæ occur plentifully in the lake, 27/4/36, 12/11/37.

Limnophilus centralis Curt.

Plentiful and widely distributed, the adults frequently sheltering in Scots Fir.

Bradford Dale. Longshaw, 31/7/35. Cordwell, 10/7/35. Padley Wood, 27/7/36, 25/7/37. Blacka Moor, 5/7/36, 24/8/37.

L. vittatus Fabr.

Bradford Dale, 25/5/35. Longshaw, 27/4/36. Larvæ occurred commonly in a cattle pool in Coomb's Dale (Stoney Middleton), 7/4/36.

L. auricula Curt.

Another plentiful species, the adults frequently sheltering in Scots Fir.

Blacka Moor, 7/6/35, 24/8/36. Longshaw, 23/7/35.

L. luridus Curt.

This species appears to frequent moorland pools especially. Ringinglow, 19/7/35. Blacka Moor, 27/6/35.

L. sparsus Curt.

Blacka Moor, 27/6/35. Longshaw, 27/7/36. Cordwell, 22/7/36.

Anabolia nervosa Curt.

A species occurring on the wing rather late in the year.

Lathkill Dale, 18/9/31. Bradford Dale, 10/31, 8/32. The well-known larvæ are frequent in the streams during the early summer.

Stenophylax stellatus Curt.

I have not found this species very often, and think it less common than the next.

Cordwell, 3/10/31.

S. latipennis Curt.

A species very similar to the last, and perhaps frequently confused with it. I find it more widely distributed than the last. Larvæ are frequent in rapid upland streams, the young individuals constructing flattened cases of leaf portions (suggestive of the cases of *Glyptotaelius*) and reverting to the common cylindrical stone ones later.

Bradford Dale, 3/7/32. Lathkill Dale, 8/8/32. Blacka Moor, 21/8/35, 5/9/36, 24/8/37. Birchover, 1/9/33. Hathersage, 18/9/34. Longshaw, 28/8/34, 27/8/37. Padley Wood, 9/8/34.

Micropterna sequax McL.

I have so far only one record of this species.

Lathkill Dale, 28/8/36.

Halesus radiatus Curt.

This is a fairly common species, emerging late in the year.

Longshaw, 10/34. Bradford Dale, 2/10/31. Hathersage, 7/10/35.

H. digitatus Schr.

Perhaps not quite so common as the last.

Cordwell, 3/10/31. Hathersage, 5/8/35.

H. auricollis Pict.

Bradford Dale, 10/31. Lathkill Dale, 10/32. Hathersage, 12/10/34.

H. guttatipennis McL.

This is a local species, my only record being Lathkill Dale.

It has been recorded previously from Dovedale (*E.M.M.*, 1911, p. 19), Miller's Dale, (*Entomol.*, 1933, p. 282), and Lathkill Dale (*Naturalist*, 1899, p. 51).

Drusus annulatus Steph.

A very plentiful and widely distributed species. Larvæ are found in large numbers in rapid upland streams, where the water is clear and well aerated.

Bradford Dale, 10/31. Lathkill Dale, 8/8/32, 28/8/36, 5/6/37.
Padley Wood, 10/8/33, 27/7/36, 16/9/37. Bakewell (R. Wye).
Dovedale, 10/7/33. Bretton Clough, 1/7/36. Blacka Moor,
5/9/36 (larvæ plentiful though small, 17/4/36).

Ecclisopteryx guttulata Pict.

Another common and widely distributed species.

Padley Wood, 16/9/37. Dovedale, 15/7/33. Lathkill Dale, 10/8/32.
Miller's Dale, 3/8/33. Hathersage, 5/8/35, 7/10/35. Bretton
Clough, 1/7/36. Ford Valley, 8/10/36.

Chaetopteryx villosa Fabr.

This is another of the late emerging species.

Bradford Dale, 10/31. Lathkill Dale, 17/9/32. Hathersage, 13/10/34.
Longshaw, 25/9/34.

Family—SERICOSTOMATIDÆ

Sericostoma personatum Spence.

A common and widely distributed species.

Dovedale, 15/7/32. Bradford Dale, 8/9/33. Longshaw, 28/6/34.
Bretton Clough, 17/8/36. Lathkill Dale, 5/6/37.

Silo pallipes Fabr.

Common and widely distributed. The characteristic larvæ occur plentifully in rapid streams.

Alport, 19/8/33. Dovedale, 8/32. Bretton Clough, 17/8/35, 29/8/36.
Monsal Dale, 17/7/32. Hathersage, 31/8/36. Longshaw. Lathkill
Dale, 10/8/36.

S. nigricornis Pict.

A much less common species.

Alport, 19/5/33. Bradford Dale, 19/5/33. Dovedale, 5/6/37.

Crunoecia irrorata Curt.

The larvæ (with their characteristic cases), occur as members of the hygropetric fauna on wet rock-faces neighbouring waterfalls, etc.

Padley Woods, 10/5/35, 27/7/36, 27/8/37, 16/9/37.

Lepidostoma hirtum Fabr.

My only locality for this species so far is Hathersage (R. Derwent),
31/8/36.

Lasiocephala basalis Kol.

Bakewell (R. Wye) is my only locality at present, though the species
was taken by A. E. Eaton in Dovedale.

Family—ODONTOCERIDÆ

Odontocerum albicorne Scop.

This striking species is frequently very numerous by rapid streams, the insects resting with their bodies lying along the stems of rushes, and hence difficult to see ; while the larvæ occur in numbers in the near-by stream.

Dovedale, 15/7/33. Bretton Clough, 17/8/35, 29/8/36. Blacka Moor,
20/7/31, 6/8/37. Longshaw, 27/7/36. Cordwell, 10/7/35.

Family—LEPTOCERIDÆ

Leptocerus fulvus Ramb.

Longshaw, 17/8/34.

Leptocerus aterrimus Steph.

Plentiful and widely distributed.

Alport, 1/7/33. Bakewell, 1/7/33. Longshaw, 14/7/34. Lathkill Dale, 28/8/36. Renishaw, 14/7/34.

L. albifrons L.

Monsal Dale, 21/7/33. Hathersage, 31/8/36. On this last occasion, the adults were flying in swarms over the R. Derwent in the evening.

L. commutatus McL.

The only locality where I have taken this species is Hathersage, 31/8/36. (McLachlan had it, however, from Dovedale (V.H.).)

L. bilineatus L.

This species occurs plentifully in Bradford Dale, flying in large numbers over the stream, 20/5/32, 16/6/33, 8/7/33, 30/7/36.

Mystacides nigra L.

Padley Wood, 19/7/35.

M. azurea L.

This seems to be the commonest member of the genus. It commonly flies in swarms over the water during the daytime.

Bradford Dale, 30/7/32, 20/5/33, 1/7/33. Bakewell, 2/9/33. Longshaw Lake, 18/8/34, 27/7/36, 20/8/36.

M. longicornis L.

Occasionally taken with the previous species.
Bradford Dale, 2/9/33.

Trienodes bicolor Curt.

The interesting natatory larva of this species inhabits pools and small lakes, and it occurs in numbers in a pool near Youlgreave, and also in one near Baslow. The adults fly in quantity over the water during the daytime.

Youlgreave, 12/6/33, 1/9/33 and various other dates.

Adicella reducta McL.

A rather more delicate-looking species, and apparently not common.
Longshaw, 8/7/35. Blacka Moor, 27/6/35.

Oecetis lacustris Pict.

Another of the less robust species, whose larvæ occur in standing waters.

Longshaw Lake, 17/8/34, 7/6/35, 8/7/35, 27/7/36.

FAMILY MOLANNIDAE.

Beraea maurus Curt.

The larvæ frequently occur on wet rock- and plant-surfaces by falls and rapids, and by springs, and constitute a portion of the hygropetric fauna.

Longshaw, 31/7/35, 27/8/37. Padley Wood, 31/7/35, 27/7/36, 20/7/37, 27/8/37.

Beraodes minuta L.

This very interesting species occurred in numbers by the stream-side and resting on the vegetation, in Lathkill Dale, 5/6/37.

FAMILY HYDROPSYCHIDAE

Hydropsyche pellucidula Curt.

Monsal Dale, 17/7/33, is my only locality for this species.

H. angustipennis Curt.

Common and widely distributed, the larvæ constructing their webs in clear rapid streams.

Bradford Dale, 6/9/33. Youlgreave, 19/5/33 (larvæ were very plentiful). Hathersage, 8/10/36. Bretton Clough, 29/8/36.

Hydropsyche instabilis Curt.

Also common and widely distributed.

Dovedale, 15/7/33. Hathersage, 8/10/34. Monsal Dale, 17/7/32.

Diplectrona felix McL.

Bretton Clough, 1/7/36. Padley Wood, 31/7/35. Longshaw, 27/7/36,
20/8/36.

FAMILY PSYCHOMYIDÆ

Tinodes wæneri L.

This is one of our commonest and most widely-distributed species.

The larvæ construct their sediment-covered galleries under stable stones in rapid streams.

Monsal Dale, 17/7/33. Padley Wood, 22/7/33, 31/7/35. Lathkill Dale, 8/33. Bradford Dale, 8/7/33. Dovedale, 8/32, 15/7/33. Bakewell, 26/5/36. Ashford-in-the-Water, 1/7/33.

T. aureola Zett.

The larva of this species forms a constituent of the hygropetric fauna on wet rock-surfaces. My only locality is in Padley Wood, 27/6/35, 18/7/35, 20/6/37, 11/7/37. Larvæ occur here commonly in the early part of the year.

T. dives Pict.

Not so common as *T. wæneri*, but not rare.

Lathkill Dale, 10/8/32, 1/9/33. Bakewell, 20/5/33. Bradford Dale, 19/5/33. Dovedale, 28/5/37.

Lype phacopa Steph.

An uncommon species, for which I have one locality only.

Padley Wood, 6/7/35.

Psychomyia pusilla Fabr.

The larvæ have similar habits to those of *Tinodes*, constructing tortuous tubes of fine sediment, usually on the upper surfaces of stable stones in rapid streams.

Hathersage, 25/6/33. Lathkill Dale.

FAMILY POLYCENTROPIDÆ

Plectrocnemia conspersa Curt.

A plentiful species, whose larvæ frequent rapid streams.

Padley Woods, 10/8/33, 2/9/33. Cordwell, 22/7/36. Lathkill Dale, 8/8/36.

Polycentropus flavomaculatus Pict.

Another common and widely-distributed species, the larvæ having similar habits to the last.

Dovedale, 15/7/33. Bradford Dale, 20/5/33. Hathersage, 9/7/32. Padley Wood, 10/8/33, 31/7/35. Monsal Dale, 17/7/32, 28/5/37. Bakewell, 20/5/33. Lathkill Dale.

Cyrnus trimaculatus Curt.

Less common than the last.

Hathersage, 25/6/33, 15/9/34. Padley Wood, 31/7/35. Lathkill Dale.

FAMILY PHILOPOTAMIDÆ

Philopotamus montanus Don.

This is one of the earliest species to emerge in the spring, but it is also found throughout the season until autumn.

Longshaw, 11/3/33. Bretton Clough, 27/3/35, 28/8/36. Padley Wood, 28/3/36. Lathkill Dale, 8/32, 17/9/32.

Wormaldia occipitalis Pict.

Plentiful about clear streams.

Padley Wood, 25/4/35, 18/7/36, 11/7/37, 16/8/37. Lathkill Dale, 28/8/36. Blacka Moor, 5/9/36. Longshaw, 25/9/35, 27/8/37.

W. subnigra McL.

A much less common and more local species.

Padley Wood, 18/7/35.

FAMILY RHYACOPHILIDÆ

Rhyacophila dorsalis Curt.

A very plentiful and widely-distributed species, whose larva is a common object in rapid streams.

Bradford Dale, 20/5/33. Monsal Dale, 8/32. Bakewell, 28/8/33, 26/5/36. Miller's Dale, 17/6/32. Padley Wood, 26/9/32, 29/3/36. Lathkill Dale, 10/8/32. Blacka Moor, 28/6/35. Hathersage, 13/10/34, 31/8/36.

R. oblitterata McL.

About equally plentiful as the last, and seeming to emerge rather later in the season.

Monsal Dale, 17/7/32. Padley Wood, 26/9/32, 1/9/33, 7/10/33, 27/8/37. Bradford Dale. Lathkill Dale, 8/32, 8/8/36. Hathersage, 15/10/34. Bretton Clough, 3/9/37.

R. munda McL.

This species is decidedly less common than the preceding two species. Bradford Dale, 8/30. Lathkill Dale, 28/8/36.

Glossosoma vernale Pict.

One of our commonest species.

Bakewell, 28/8/33. Ashford-in-the-Water, 25/3/33, 1/4/35. Bradford Dale, 30/7/33. Hathersage, 15/10/34, 3/8/36, 6/4/37. Grindleford, 15/9/34, 25/9/36.

G. boltoni Curt.

This species appears to be more local than the last, and much less common.

Bretton Clough, 1/7/36. Hathersage, 31/8/36.

Agapetus fuscipes Curt.

Probably the most plentiful species. The larvæ and pupæ occur in enormous numbers in many of our streams, but seem to be quite absent from others.

Miller's Dale, 19/5/33. Monsal Dale, 28/5/37. Bradford Dale, 27/7/31, 6/5/33. Lathkill Dale, 10/5/32, 5/6/37. Bakewell. Padley Wood, 21/7/35, 27/6/36. Bretton Clough, 29/8/36. Dovedale, 28/5/37.

A. comatus Pict.

A much less common species.

Hathersage, 9/9/33, 15/9/34. Grindleford, 25/9/34. Bakewell, 26/5/36.

FAMILY HYDROPTILIDÆ

Five species belonging to this family have been recorded for Derbyshire, mainly from Dovedale, but so far I have taken one species only.

Hydroptila forcipata Eat.

These small and very active insects were about in enormous numbers by the river at Bakewell, 26/8/33, and in Bradford Dale, 20/7/33.

LEPIDOPTERA NOTES FOR 1937

GEO. E. HYDE

THE year 1937 has been poor for Lepidoptera ; in fact many entomologists I know regard it as the worst year since the war. I will not attempt to name all the common things seen, but will mention those of special interest. Species named, unless specially mentioned, were found near Doncaster (within 20 miles).

Most of the early spring moths, including those which are generally common, were scarce.

SPECIES NOTED

<i>Polyphoca flavicornis</i>	Yellow Horned	In small numbers.
<i>Hybernia rupicaprarua</i>	Early Moth	Common.
<i>H. leucophaearia</i>	Spring Usher	Common.
<i>H. marginaria</i>	Dotted Border	Common.
<i>Anisopteryx aescularia</i>	March Moth	Common.
<i>Phigalia pedaria</i>	Pale Brindled Beauty	Very few seen.
<i>Pachys strataria</i>	Oak Beauty	One seen.

I had a few days in Hunts. at the end of March (Easter). Lepidopteral insects were very down in numbers, and night-feeding larvæ of Noctuidæ, which should have been out in reasonable numbers at that time, were hardly to be found. There was little doing in the daytime among butterflies or moths.

FURTHER SPECIES NOTED LATER

<i>Smerinthus ocellatus</i>	Eyed Hawk	2 specimens noted.
<i>Metopsilus porcellus</i>	Small Elephant	1 seen.
<i>Chaerocampa elpenor</i>	Elephant	Several seen.
<i>Hemaris fuciformis</i>	Broad-bordered Bee Hawk	Of which several were noted in 1936, none seen.
<i>Orgyia gonostigma</i>	Scarce Vapourer	Several larvæ taken.
<i>Saturnia pavonia</i>	Emperor	3 noted.
<i>Hylophila prasinana</i>	Green Silver Lines	A few larvæ taken and reared.
<i>Parasemia plantaginis</i>	Wood Tiger	Several noted.
<i>Arctia caja</i>	Garden Tiger	The larva (woolly bear) is usually common, very down in numbers.

Larvæ of the night-feeding Noctuidæ were scarce in the spring and early summer, such species as :—

Noctua augur, *N. baja*, *N. triangulum*, *N. brunnea*, *Triphaena fimbria*, and *T. ianthina*.

<i>Eumichtis protea</i>	Brindled Green	Several larvæ taken.
<i>Diloba caeruleocephala</i>	Figure of Eight	Several larvæ taken.
<i>Heliaca tenebrata</i>	Small Yellow Underwing	Several seen.
<i>Plusia moneta</i>	Golden Plusia	A few larvæ noted.
<i>P. chrysitis</i>	Burnished Brass	Several seen.

<i>P. festucae</i>	Gold Spot	Odd larvæ seen.
<i>Geometrinae</i>		
<i>Geometra papilioaria</i>	Large Emerald	2 noted.
<i>Odezia atrata</i>	Chimney-sweeper	Several taken, had not been noted for several years.
<i>Mesoleuca albicillata</i>	Beautiful Carpet	One or two seen.
<i>Hydriomena ruberata</i>	Ruddy Highflyer	One larva taken.
<i>Boarmia repandata</i>	Mottled Beauty	Larvæ scarce, but a few taken and reared.
<i>Zygaena trifolii</i>	Five-spot Burnett	Pupæ taken and moths reared, not often to be found near Doncaster.
<i>Zeuzera pyrina</i>	Leopard Moth	3 females of the moth seen.

The Doncaster area is not specially noted for butterflies at the best of times, and this year most of even the common species were reduced. The 'whites' of the first brood were out in late April and May, but

<i>Pieris brassicae</i>	Large White	Quite scarce, and the other two species not common.
<i>Euchloe cardamines</i>	Orange-tip	Scarce.

Of hibernating kinds one or two *Vanessa*, Peacock, seen, and *V. urticae*, Small Tortoiseshell, very reduced.

Several attempts were made to collect larvae of *Epinephele ianira*, Meadow Brown, *E. tithonus*, Gatekeeper, and *Aphantopus hyperanthus*, Ringlet. All were down in numbers, and incidentally all are night-feeding larvæ, to be found on various grasses.

Several larvæ of *Gonepteryx rhamni*, Brimstone, found in June on a buckthorn bush growing in N. Lincs.

<i>Argynnis selene</i>	Small Pearl-bordered Fritillary	Two or three seen, N. Lincs.
<i>Pyrameis cardui</i>	Painted Lady	3 noted.
<i>P. atalanta</i>	Red Admiral	Very few seen, usually a common insect.
<i>Caenonympha typhon</i>	Large Heath	About up to its usual numbers.
<i>Thecla w-album</i>	White Letter Hairstreak	A few larvæ taken.
<i>Chrysophanus phlaeas</i>	Small Copper	First brood, May, scarce, second late-July and August, rather scarce, third late September in larger numbers.
<i>Lycaena argus</i>	Silver-studded Blue	A local species, it was more numerous in 1936.
<i>Augiades sylvanus</i>	Large Skipper	Usually common — scarce.

YORKSHIRE COLEOPTERA IN 1937

W. J. FORDHAM, M.R.C.S., L.R.C.P., D.P.H.

DESPITE the generally unfavourable reports received from collectors in the county ten species have been added to the Yorkshire list during the year, namely *Haliphus heydeni*, *Atheta cinnamoptera*, *Oligota atomaria*, *Conosomus immaculatus*, *Quedius xanthopus*, *Philonthus jurgans*, *Gnathoncus punctulatus*, *Haplocnemus impressus*, *Hylecoetus dermestoides* and *Pityophthorus pubescens*.

The excursions of the Yorkshire Naturalists' Union were attended by members of the Coleoptera Committee and beetles were taken at Keld (9 species), Hutton-le-Hole (66 species), Bubwith (50 species), and the Doncaster district (82 species).

Several articles and notes on Coleoptera in Yorkshire will be found in the pages of *The Naturalist* and the *Entomologists' Monthly Magazine*, in the latter of which should be noted two papers on investigations on beetles associated with carrion in Pannal Ash near Harrogate by R. R. U. Kaufmann.

As usual the asterisk denotes a new Vice-County record. The names of the recorders are as follows :

M.D.B.	M. D. Barnes	Huddersfield.
E.G.B.	E. G. Bayford	Barnsley.
H.B.	H. Britten	Whitby.
J.M.B.	J. M. Brown	Sheffield.
J.R.D.	J. R. Dibb	Leeds.
W.J.F.	W. J. Fordham	Barmby Moor.
W.D.H.	W. D. Hincks	Leeds.
R.R.U.K.	R. R. U. Kaufmann	Harrogate.
E.J.P.	Rev. E. J. Pearce	Mirfield.
C.E.T.	Rev. C. E. Tottenham	East Airedley.
G.B.W.	G. B. Walsh	Scarborough.

(1) The beetles new to the county are as follows :

Haliphus heydeni Wehncke. One in the River Derwent at Malton on the East Riding side of the river (E.J.P.), 21/6/37. (See *The Naturalist*, 1937, p. 212.) A species usually taken in small grassy ponds but also singly in rivers. It is locally common. It has been taken in several localities in Lancashire and also in Cheshire and Cumberland, reaching its most northerly station in the latter county. It is unrecorded from Ireland.

Atheta cinnamoptera Th. Whitby district, 1937 (H.B.). This is a local species, occurring in moss, dung, carrion, and decaying fungi and recorded in the north from Cheshire, Northumberland, and Cumberland in which latter county it is not scarce. It is common in Scotland to Moray and apparently unrecorded from Ireland.

Oligota atomaria Er. Saltersgate, 10/4/37. Amongst bedding in a cowshed (H.B.). (V.C. 62.) A local species found in fern debris and vegetable refuse and recorded from Lancashire, Cheshire, Northumberland, and Cumberland (Scarce in moss.) It is unrecorded from Scotland and Ireland.

Conosomus immaculatus Steph. Whitby district, 1937 (H.B.). A local species occurring in fungi, moss, cut grass, flood and vegetable refuse. In the north it has been taken in Lincolnshire, Nottinghamshire, Northumberland, and Durham, Lancashire and Cumberland, but is apparently unrecorded from Scotland. In Ireland it occurs in Leinster and Munster.

Quedius xanthopus Er. Mulgrave Woods, 30/3/37 (H.B.). (62.) A scarce species occurring in moss, dead leaves, fungi, and under bark and in rotting wood. It has been taken in Nottinghamshire, Durham, and Cumberland and also in the Highlands of Scotland. It is unrecorded from Ireland.

Philonthus jurgans Tott. Described as new to science by the Rev. C. E. Tottenham (*E.M.M.*, 1937, 176). Among other places from Leeds (W.D.H.), East Ardsley (63), and Skipwith (61). Also from Cheshire and Durham (most northerly record). It has also been taken at Whitby by H. Britten.

Gnathonus punctulatus Th. Pannal Ash, one, 6/36 (R.R.U.K.). (64.) A rare species occurring in carrion, old bones, birds' nests, haystack, flood and vegetable refuse and taken at Cleethorpes, Lincs., and in Lancashire and Cheshire. This Harrogate record is apparently its most northerly station.

Haplocnemus impressus Marsh. Two from pine, Newgate Bank, seven or eight miles north of Helmsley along Bilsdale, 5/37 (G.B.W.). (62.) A rare species found under bark and on pine, elm, oak, and pear trees, among the foliage in summer. Taken in Sherwood Forest, Notts., at Carlisle, and at Bowden, Cheshire, in the burrows of *Myelophilus piniperda*. It occurs in Scotland but has not been recorded from Ireland.

Hylecoetus dermestoides L. A male from pine, Newgate Bank, 5/37 (G.B.W.). A very local species, occurring in oak, pine, and birch. It has been recorded from Derbyshire, Nottinghamshire, Lancashire, and Cheshire and also from Scotland and Ireland.

Pityophilus pubescens Marsh (*ramulorum* Perr.). Skipwith, 5/37, by sweeping (W.D.H.). (61.) Common throughout Britain on twigs of Scots Pine. Frequently with the fungus *Peridermium*. Widely distributed in Ireland.

(2) The following records extend the known distribution of beetles already on record from the county :

Notiophilus hypocrita Putz. Near the 'Bridestones' and 'Falcon,' Scarborough moors. (62.) (G.B.W.)

Blethisa multipunctata L. Running in the sunshine on mud flats at Fairburn Ings, 29/5/37. (64.) (M.D.B.)

*61. *Badister sodalis* Duft. Skipwith, 1/8/37 (W.D.H.).

*61. *Acupalpus luridus* Dj. Bubwith, 26/6/37 (J.R.D.). Only on record from Thorne Moor.

Harpalus aeneus F. Barnsley, a very handsome variety, dark metallic green with the basal third of the elytra suffused with metallic red. (E.G.B.)

Pterostichus adstrictus Esch. Near the 'Bridestones' on the Scarborough moors. (G.B.W.)

Amara ovata F. Bubwith. (61.) (W.J.F.)

Agonum piceum L. Bubwith (W.J.F.).

Bembidion mannerheimi Sahl. Near the 'Bridestones' on the Scarborough moors (G.B.W.).

B. nigricornis Gyll. With the preceding (G.B.W.).

- Bembidion rupestre* L. Hull. (61.) (G.B.W.) Scarborough moors just beyond 'Falcon' (G.B.W.).
- B. varium* Ol. A form with obscure markings on drying river mud at Hull (G.B.W.).
- Cymindis vaporariorum* L. Scarborough moors in damp place just beyond 'Falcon' (G.B.W.).
- Dromius agilis* F. Skipwith, 13/5/33 (J.M.B.).
- D. meridionalis* Dj. Brighton under elder bark and in moss. (61.). Skipwith Common by beating pine (W.J.F.).
- *63. *Haliphus immaculatus* Gerh. Potteric Carr. (63.) (W.D.H.) (C.E.T.).
- Coelambus impressopunctatus* Schal. Potteric Carr (W.D.H.), (C.E.T.).
- Deronectes borealis* Gyll. Fylinghall. (62.) Hutton Mulgrave. (62.) (W.J.F.).
- Hydroporus angustatus* Stm. Potteric Carr (W.D.H.), (C.E.T.).
- Agabus paludosus* F. Common in running water, Pickering. (62.) (G.B.W.).
- A. didymus* Ol. With the last (G.B.W.).
- Platambus maculatus* L. var. *inornatus* Schil. Goredale, 3/7/35 (J.M.B.).
- Rhantus graffii* Gyll. Potteric Carr (W.D.H.), (C.E.T.).
- *63. *R. pulverosus* Steph. With the preceding (W.D.H.), (C.E.T.).
- Philhydrus testaceus* F. Menthorpe and North Duffield. (61.) (W.J.F.).
- P. frontalis* Er. Potteric Carr (W.D.H.), (C.E.T.).
- Laccobius nigriceps* Th. Wadworth Carr (W.D.H.), (C.E.T.).
- *63. *L. alutaceus* Th. Potteric Carr (W.D.H.), (C.E.T.).
- Berosus luridus* L. With the last (W.D.H.), (C.E.T.).
- *63. *Limnebius papposus* Muls. Wadworth Carr (W.D.H.), (C.E.T.). Only on record from Escrik.
- *63. *Megalephorus aequalis* Th. With the last (W.D.H.), (C.E.T.).
- Hydrochus elongatus* Schal. Potteric Carr (W.D.H.), (C.E.T.).
- *64. *Aleochara diversa* Sahl. One at Pannal Ash, 4/36 (R.R.U.K.). (See *E.M.M.*, 1937, 231.)
- A. spadicea* Er. Sherburn. (62.) Moles' nests (G.B.W.).
- Atheta angusticollis* Th. Pannal Ash, 7/36, two (R.R.U.K.).
- *64. *A. zosteræ* Th. Pannal Ash, two, 7/36 (R.R.U.K.).
- Homalota plana* Gyll. Fairly common under bark. Helmsley. (62.) (G.B.W.).
- Quedius longicornis* Kr. Sandsend, 29/3/37. (62.) (H.B.).
- Q. othiniensis* Joh. Mole's nest. Sherburn. (62.) (G.B.W.).
- Philonthus rectangulus* Shp. Leeds, in garden in decaying grass heaps (W.D.H.).
- Leptacinus batychrus* Gyll. Marton. (62.) (W.J.F.) Confirms our only Yorkshire records. (Marton, G. T. Rudd, York. Ste. Man.)
- Lathrobium ripicola* Czwal. Scalby Beck. (62.) (G.B.W.).
- Anthobium ophthalmicum* Pz. Hutton-le-Hole. (62.) (G.B.W.).
- Agathidium atrum* Pk. Stack refuse. Beckhole. (62.) (G.B.W.).
- Silpha tyrolensis* Laich. Semerdale. (64.) 27/4/35 (J.M.B.).
- Choleva spadicea* Stm. Raincliffe Woods. (62.) (G.B.W.).
- *64. *Catops fuliginosus* Er. Pannal Ash, numerous (R.R.U.K.).
- Anisosticta 19-punctata* L. By sweeping low vegetation on water-logged ground at Fairburn Ings, 29/5/37. (64.) (M.D.B.).

- Carpophilus sexpunctatus* F. Gawber Wood, 7/2/37. (63.) One or two (E.G.B.).
- *62. *Librodor hortensis* Fc. Strensall Common, 4/9/37 (G.B.W.).
Byturus aestivus L. Millington, 1/8/36. (61.) (J.M.B.).
Cryptophagus lycooperdi Hbst. Houghton Woods, 9/37. (61.) (G.B.W.).
C. setulosus Stm. Bubwith, flood refuse. (61.) (W.J.F.).
- *64. *C. umbratus* Er. Pannal Ash, two, 4/36; two, 11/36 (R.R.U.K.).
- *64. *C. affinis* Stm. Pannal Ash, three, 5/36, 11/36 (R.R.U.K.).
- *64. *Atomaria linearis* Steph. Pannal Ash, one, 7/36 (R.R.U.K.).
Mycetophagus piceus F. Gawber Wood, 7/2/37 (E.G.B.).
Heterocerus marginatus F. Again fairly common in July in the old locality at Thorner. (64.) (W.D.H.).
- *65. *Aphodius granarius* L. Sedbergh, 16/5/32 (J.M.B.).
Sericus brunneus L. Skipwith, 13/5/33 (J.M.B.); Fairburn, 16/6/34 (J.M.B.).
Limonium aeruginosus Ol. and *minutus* L. Skipwith, 5/37 (W.D.H.).
- *62. *Corymbites nigricornis* Pz. Buttercrambe (G.B.W.).
Prosternon holosericeus F. Skipwith, 6/37, common (W.D.H.).
Platycis minuta F. Mulgrave Woods, 25/8/37, very abundant (H.B.).
Cantharis abdominalis F. var. *cyanea* Curt. Hutton-le-Hole. (62.) (G.B.W.).
- *61. *C. lateralis* L. Bubwith (J.R.D.) only recorded from Ilkley.
Malthodes dispar Germ. Bubwith and district (W.J.F.).
Pogonochaerus hispidus L. (*dentatus* Fourc.). Robin Hood's Bay, 6/10/37 (J.M.B.).
Stenostola ferrea Schr. Hutton-le-Hole (G.B.W.).
Orsodacna cerasi L. With the last (G.B.W.).
Donacia versicolore Brahm. Wadworth Carr (W.D.H.), (C.E.T.).
Cryptocephalus pusillus F. Strensall Common, 4/9/37 (G.B.W.).
Lochmaea suturalis Th. and var. *nigrita* Weise. Common on hazel and hawthorn at Helmsley far away from any heather (G.B.W.).
- *61. *Apteropeda orbiculata* Marsh. Skipwith, 5/37 (W.D.H.).
Orchesia undulata Kr. Ecclesall Wood, 25/9/35. (63.) (J.M.B.).
Anthribus variegatus Gf. Skipwith, 6/37 (W.D.H.).
Attelabus nitens Scop. Skipwith, 8/37 (W.D.H.).
Polydrusus pilosus Gredl. Abundant on larch, Newgate Bank near Helmsley (G.B.W.).
Dorytomus rufulus Bed. Jugger Howe Dale (G.B.W.).
Elleschus bipunctatus L. With the last (G.B.W.).
Anthonomus pomorum L. Bubwith (W.J.F.).
Nanophyes marmoratus Goeze. Wadworth Carr (W.D.H.), (C.E.T.).
Phloeophthorus rhododactylus Marsh. Skipwith, 5/37, sweeping (W.D.H.).
Myelophilus piniperda L. Specimens boring into injured sapling of *Pinus sylvestris*. Brocodile Woods near Wentbridge. (63.) (M.D.B.).

ORNITHOLOGICAL SKETCHES

FROM April 1st to the 13th there will be an exhibition at Walker's Galleries, New Bond Street, London, of a fine series of water-colour sketches of 'Bird Haunts,' by Miss E. D. Tinne. Judging from monochrome reproductions we have seen, the show will be well worth visiting. The sketches are the result of much careful stalking, patient watching, and, of course, lightning sketches, in a bird reservation.

REVIEWS AND BOOK NOTICES

Les Arachnides de France, Tome VI, Pts. I to IV, 25 frs. each, Pt. V 35 frs., 1,298 pages, deals with the whole of the French spider fauna, included in which are the great majority of the species which occur also in the British Isles. It is a posthumous work by Europe's most eminent arachnologist, M. Eugene Simon—Pt. I issued in 1914, and the others prepared for publication after his death by his pupils, Mm. Berland and Fage of the Paris National Muséum d'Histoire Naturelle, 1926-37. The book is arranged as a dichotomous synopsis of families, genera and species (thereby freed from difficult grammatical usages), is illustrated by 2028 sectional figures of differentiating characters, and provided at the end with an alphabetical index of generic and specific names. After each family there is a synonymic catalogue of species, with references to their distribution, varied nomenclature and the works and figures of other authors. In this last section, however, there are some debatable identifications and nomenclature, but these are mainly matters for the specialist and systematist. Hitherto in this country the greatest hindrance to the study of spiders, one of our most neglected branches of natural history, has been the very scattered literature—in magazines and the transactions of scientific societies, difficult or impossible of access and very expensive—and the lack of a comprehensive up-to-date work dealing with them. With the present volume, planned on the lines indicated above, so ably carried out, this disability no longer exists, and anyone with application and perseverance can now by its valuable and reliable assistance take up the study of these most interesting creatures with every prospect of becoming a proficient student of the main order of the Arachnida. The families which have representatives in Yorkshire are: Pt. I—Dictynidae, Oonopidae, Dysderidae, Gnaphosidae (Drassidae), Theridiidae (pt.); Pt. II—Theridiidae (pt.), Erigoneae; Pt. III—Linyphiinae, Argiopinæ (Epeiridae); Pt. IV—Mimetidae, Thomisidae, Clubionidae; Pt. V—Agelenidae, Lycosidae, Salticidae. The other 6 British families contain only 8 species, all rare.—WM. FALCONER.

Wonders of the Great Barrier Reef, by T. C. Roughley, pp. xvi+282, with 52 natural-colour photographs by the author. Angus and Robertson, 8/6. The author of this enchanting book is Economic Zoologist of the Technical Museum, Sydney, and President of the Royal Zoological Society of New South Wales. We predict that every naturalist who reads the book will wish to journey at once to the Great Barrier Reef and see its wonders at first hand. The reef is the largest of its kind in the world. It is about 1,250 miles long and encloses an area of 80,000 square miles of coral reefs, islets, etc. We are accustomed to thinking of Australia as the home of striking and unusual forms of life and the great reef teems with strange and beautiful things. The coral itself is of every shade and form, the mollusca are large and in many cases of lovely colour and there are fish of every hue, shape, and size. Birds are to be seen in countless numbers and one may well say that the whole of the vast area is a paradise for the naturalist. Mr. Roughley writes in a most readable yet scientific way and one finds it difficult to put his book down after commencing to read. The coloured pictures are the best of their kind we have ever seen and they have all been reproduced from actual colour photographs. The production of the book is a credit to the publishers.

Bee Keeping (Bulletin No. 9 of the Ministry of Agriculture and Fisheries), pp. iv+56, with 22 illustrations. H.M. Stationery Office, 1/- (postage extra). This is the Sixth Edition of an excellent summary of modern apicultural methods and contains a surprising amount of information in its 56 pages. There are chapters on advice regarding all aspects of bee keeping and there are descriptions of the various diseases and their treatment.

The Handbook of British Birds, by H. F. Witherby, editor, Rev. F. C. R. Jourdain, Norman F. Ticehurst, and Bernard W. Tucker. To be completed in five volumes. The price per volume as published is 21/- net for those who have entered their names for the complete work. If the whole five volumes are not required the price per volume is 25/- net each. Published by H. F. & G. Witherby, Ltd., 326 High Holborn, London, W.C.1. During the present month Messrs. Witherby will publish the first of the volumes of the eagerly-awaited **Handbook of British Birds**. The original **Practical Handbook** went out of print in 1934 and the new and improved edition will be enthusiastically welcomed. Many improvements will be found in the five volumes which are to appear at half-yearly intervals. Perhaps the most evident of these are the coloured plates which will depict the birds in as many plumages as possible and with detailed accuracy. Another important new item is a chart of song periods by Mr. H. G. Alexander. The volume on sale this month contains 'Crows to Flycatchers' (inclusive). We urge all natural history societies to become subscribers to a work which promises to be easily the best of its kind ever published.

The Locust Outbreak in Africa and Western Asia in 1936, by B. P. Uvarov and Miss W. Milnthorpe, Econom. Advis. Council. 1937, pp. 55 and 9 maps, 3/- net. (H.M. Stationery Office.) This survey continues five previous surveys, the first being made in 1925. Hopper areas and swarm directions of four "plague" locusts are mapped, and behaviour observed. The Desert Locust (*Schistocera gregaria*) invaded the Sudanese-Arabian area but neither India nor North Africa. In South Africa this species does not swarm. Winter breeding occurs around the Red Sea. The African Migratory Locust (*Locusta migratoria migratorioides*) swarmed slightly in French and British West Africa but not in the east and south-east. The Red Locust (*Nomadaevis septemfasciata*) outbreak south of the Equator declined but partial invasions are expected there for several years. Migration occurred northwards to the Sudan. Stress is laid on the destruction of young swarms. Locust invasions in Africa are steadily decreasing due to control measures, with the exception of the Desert Locust. There is an excellent bibliography.

NEWS FROM THE MAGAZINES

The Entomologist for January contains 'Arctic Butterflies, and especially those of Maalselven, Lapland, Lat. 69° N.', by P. H. Thomas; 'Further Records of Insect Migration in the Argentine Republic,' by K. J. Hayward; 'Quantitative Methods of Local Entomofaunistic Survey,' by J. Cowley; '*Catocala fraxini* L. A new British Record of Capture and Breeding,' by E. A. Cockayne, C. N. Hawkins, F. H. Lees, Sir B. Whitehouse, and H. B. Williams; 'The Rhopalocera of the Islands of Coll, Canna, Sanday, Rhum, Eigg, Soay and Pabbay (Inner Hebrides) and of Barra, Mingulay and Berneray (Outer Hebrides),' by J. W. H. Harrison; and several Notes and Observations.

The Entomologist's Monthly Magazine for January contains 'Notes on the Neuroptera (s. str.) and Odonata of Glen Lyon, Mid-Perthshire, with some other Scottish Records,' by K. J. Morton; '*Nysius (Ortholomus) punctipennis* H.S. a British Species,' by W. E. China (Tuddenham Heath, Suffolk. *P. Harwood* running on dry sand among sparse vegetation including *Sedum acre*); 'Observations on the British Psyllidæ. II. Notes on the *Salix*-feeding Psyllidæ,' by G. H. Harrison; '*Pompilus quinquefasciatus* sp. nov. from Ranchi, Behar, India,' by W. B. R. Laidlaw; 'A Plea for Better Citation of Synonymy,' by W. D. Hincks; 'The Hippoboscidae (Diptera) recorded from the Pacific Islands,' by G. B. Thompson; 'A Preliminary List of the Coleoptera of Windsor Forest,' by H. Donisthorpe; and several short notes.

THE VEGETATION OF YORKSHIRE AND SUPPLEMENT TO THE FLORAS OF THE COUNTY

(Continued from page 52)

GROUP XII.—*Koehleriana*

R. dasyphyllus Rogers. V.C. 63, 64, 65. (= *R. Koehleri*, var. *pallidus* Bab.) Generally distributed, and in the hilly country, often abundant. It has been seen at 800 feet in several places. Our most common glandular species. Most of the 'arms' are gland-tipped, sometimes even the longest prickles. The long stamens will often assume a very straight erect position, at right angles to the narrow petals, a peculiarity not marked in any other local form.

R. Dalehead, Newton-in-Bowland, 1909, J. F. Pickard.

L. Sedbergh district, 1906, W. M. Rogers.

N. Pateley Bridge, abundant; Pannal, Nidd Bridge, 1909, A.E.B.

W. Quakers' Wood, near Acomb, 1878, G. Webster. Scarcroft, 1908; North Rigton, 1909; Barwick-in-Elmete, 1910, A.E.B.

A. Moortown, Meanwood, Adel, Shadwell, etc., near Leeds, very common, 1908; Parlington Park and Hook Moor, 1909, A.E.B.

C. Soothill, Howley, 1884, P. F. Lee. Mytholmroyd district, 1906, W. B. Crump.

D. Kimberworth, 1906, W. M. Rogers. Rivelin Valley, Sheffield, 1907, A.E.B.

'Off type' bushes near *dasyphyllus*, with white flowers, sub-patent sepals, and radulan armature are occasionally met with, some of them flowering freely but perfecting no fruit, others quite fertile. They may be links or hybrids with *podophyllus* or other species. Such plants grow at Horsforth, Adel, Wike, Bardsey, and North Rigton.

GROUP XIII.—*Bellardiani*

Plants undoubtedly belonging to this group have been found, notably in the Aire and Don districts, but the old specimens available are not in a condition for accurate determination. A bramble having some relationships with *R. viridis* Kalt. was gathered in September, 1893, by F. A. Lees and the late John Farrah in a lane leading from Nidd Hall Church towards Brearton, near Ripley, but the specimens were cut too late in the season to exhibit the plant in its normal condition. A house and gardens now occupy the site upon which the bushes formerly grew, and a recent search in the vicinity was unrewarded.

GROUP XIV.—*Caesii*

R. dumetorum Wh. and N. V.C. 63, 64. A variable aggregate species, fairly well distributed in one form or another; locally common. Besides the well-known varieties given below, various brambles occur in the less elevated parts of the Riding (e.g. South Milford, Selby, etc.), which are either forms of *dumetorum*, or else belong to the great army of hybrids which add such especial difficulty to the understanding of the *Caesii* group. There is a possibility that even among the widely spread *dumetorum* forms there are some which have had a hybrid origin.

— var. *ferox* Weihe. V.C. 63, 64. Frequent locally, but not yet noted as occurring anywhere in great quantity. In the densely prickly stem, with stalked glands and bristles of various lengths, it often closely simulates *R. dasyphyllus*, with which it sometimes grows. This superficial resemblance does not extend to the foliage or the flowers, which

in *ferox* are both quite typical of the *Caesii* group. The petals with us are usually large and white.

N. Lanes between Nidd Hall and Ripley, 1909, F.A.L. and A.E.B.

W. Barwick-in-Elmete, North Rigton, common, 1909, A.E.B.

A. About Wike, near Leeds, in several places, 1907-9, A.E.B.

C. Norland, 1894 (*teste* E. F. Linton), Crump and Crossland's *Flora of Halifax*.

— var. *diversifolius* Lindl. V.C. 63, 64. Apparently very rare, and not recently noticed. The former records were not all for the true plant, but its presence in the Ridding is not doubted.

Y. About Ripon, 1875, Herb. Lees.

C. Near Luddenden, 1842, S. Gibson.

— var. *tuberculatus* Bab. V.C. 64. Apparently very rare, except possibly in the eastern part of the Ridding. In the past the name was often applied to certain *Caesian* hybrids containing *R. rusticanus*, and we have brambles of this nature which appear to answer very well to the book descriptions of *tuberculatus*.

W. Hedge near Acomb, Geo. Webster.

— var. *concinus* Warren. V.C. 63, 64. Locally common and often abundant. *R. dumetorum* is said to occur chiefly at low altitudes, but this variety flourishes in hilly country, and (near Pateley Bridge) was recently seen at 800 feet. It has small, roundish, and very neat leaflets, and, with us, usually pure white flowers. Probably general throughout West Yorks.

N. Near Brearton, 1909, F.A.L. and A.E.B. Pateley Bridge, 1909, A.E.B.

W. Barwick-in-Elmete. Lanes near Almescliffe Crag, abundant, 1909. Abundant between Ilkley and Bolton Abbey, 1910, A.E.B.

A. Roundhay, Wike, Eccup, etc., near Leeds, frequent, 1910; Garforth, 1908, A.E.B.

D. Sheffield district, common in hedges, Thos. Gibbs.

— var. *fasciculatus* P. J. Muell. V.C. 64. (= *R. corylifolius* var. *purpureus* Bab.)

R. Long Preston, W. M. Rogers.

R. corylifolius Sm. V.C. 63, 64, 65. Common and generally distributed but most abundant on limestone or certain clay and alluvial soils. Extremely variable. The more typical plant (known as var. *sublustris*, Lees) is common, though often abundantly represented by smaller forms which are a little away from the actual type. Var. *cyclophyllus* is much less frequent. We have various other forms of the aggregate *corylifolius*, including intermediates between the two last-named, as well as some not very nearly related to either. Among the latter are doubtless hybrids with the Dewberry and even more remote species.

— var. *sublustris* Lees. V.C. 63, 64, 65. Flowers sometimes pinkish, but more often white and very large. Aberrant plants shewing an approach in some respects to *R. caesius* have been gathered in N., W., and A. districts.

L. Dent Valley, 1906, W. M. Rogers.

R. Settle, W.M.R.

N. About Nidd Bridge and Ripley, abundant, 1909, F.A.L. and A.E.B.

W. Leathley (type), Collingham, Stubbing Moor, Barwick, Tadcaster, Cawood, 1910, A.E.B.

A. Garforth, Selby, 1909-10, A.E.B.

C. R. Calder bank, Dewsbury (type), abundant, 1906, P. F. Lee.

D. Rossington (type, with 7-nate leaves), 1907, H. E. Craven.

— var. *cyclophyllus* Lindeb. V.C. 64, 65. (=var. *conjungens* Bab.) Very different from the last in its round, much overlapping leaflets.

L. Dent Valley, 1906, W.M.R.

W. Castley near Otley, 1899, G. B. Savery. Scarcroft (allied form), 1908, A.E.B.

A. Wike near Leeds, 1909, A.E.B. Roundhay (allied form, approaching *R. dumetorum*), 1906, A.E.B.

— SP. COLL. One form, frequent near Leeds, has rhomboidal obovate leaflets, a straight rachis, and the panicle (often large and open) narrowing above.

A. Skipton, 1871, F.A.L. Roundhay, Moortown, and Shadwell, 1910, A.E.B.

W. Scarcroft, 1909, A.E.B.

R. Balfourianus Blox. V.C. 63.

C. Haybeck near Dewsbury, P. F. Lee, Herb. Lees.

R. caesioides Linn. V.C. 63, 64, 65. The distribution of the Dewberry in West Yorks. is well shewn in the *Flora*, and the localities need not be repeated here. It is abundant in the limestone districts; found also in boggy places and on clayey soils, but comparatively scarce where other conditions obtain. Though extremely variable, in fruit it can hardly be mistaken, with its very few large glaucous drupelets, clasped by the sepals. It is not likely to be confused with other brambles, excepting possibly with hybrid forms in which (as is often the case) the characteristics of *R. caesioides* are dominant.

This is one of the principal hybridising species. We cannot say so far that it hybridises with the wild Raspberry in our district, but it does with *R. subultrius* (Roundhay) and another form of *corylifolius* (Scarcroft), and with *R. rusticanus*. The hybrids shewing *rusticanus*-characters are very pretty pink-flowered plants, by no means uncommon where they occur, as in the lanes about Stubbing Moor, between Leeds and Wetherby.

R. saxatilis L.

Not in East Riding Flora.

R. Chamæmorus L.

Not in East Riding Flora. Other localities are: Botton Fell head, Whitendale, Fountain Fell, Simon's Seat top, Buckden Pike, J.F.P. Crow Hill shoulder of Boulsworth and Maw-stones Hill on Ickornshaw Moor, Jonas Bradley.

R. spectabilis Pursh. Alien, introduced.

Dryas octopetala L.

There are three stations for this near Arncliffe: (1) Steep pasture nearly to level of Cowside Beck, south of the 'West Moor, Cow Close' of the Ordnance Map; (2) Near the escarpment of Arncliffe 'Clouders'; (3) On the tabular limestone plateau of Hawkswick 'Clouder' a mile to the south-east.

In 1894 the Rev. W. Crombie (olim Keld), per J.F.P., gives a new locality, near Tail Brig, between Keld and Kirby Stephen. (Not seen by Y.N.U. at Keld meeting in 1937, though looked for. The station is just over the county boundary in Westmorland.)

Geum urbanum L.

G. rivale L.

The \times *intermedium* Ehrh. is often seen.

Some additional records are: Thorner, H.E.C., spns ! Anston Crag, H. Friend, *Nat.*, 1900. Bell Busk, W. West.

Fragaria vesca L.

F. moscata

Duchesne. (*elatio* Ehrh.). Alien.

Potentilla fruticosa L.

North Riding Flora only.

P. Anserina L.

P. argentea L.

In the East Riding this is only known as an alien at Hull Docks.

P. reptans L.

var. *microphylla* Tratt. In dry pasture turf over sand on the Braham Hall farm, near Spofforth.

P. canadensis L.

Alien. Meanwood.

P. procumbens Sibth.

Other localities are Roundhay, Hb., A.E.B., a large form, to my eyes *P. mixta* Nolte. Others from Alwoodley and Meanwood, 'typic' *procumbens*, another specimen is as clearly *P. suberecta* Zimm. Greenfield, 1880, W. West. Newton Fell, J.F.P., and many places about Slaidburn (Miss Peel) ! Surely many of these are the hybrid *suberecta*.

P. erecta (L.) Hampe. (**Tormentilla** Nest).

In range this is perhaps the widest of any Yorkshire plant, viz. from Thorne moor to the highest peaks, 2,500 ft., and no sooner does it meet *P. reptans* than insects begin to mingle the races ! What I take to be *sciaphila* Zimm. (the shade grown form of woods) is only larger, laxer and more procumbent, but all these cinquefoils need careful registration at the time of gathering as to their associates on the ground. As is elaborated further on, because of the intergrowing of *P. verna*, *P. Crantzii* and *P. erecta* over a certain half-square mile on limestone at Bastow, above Grassington, a Maze from which there seems no way out has been nature-made.

P. verna L.

Not in East Riding Flora. The plant of limestone edges above Carr End, in Semmerdale, was *P. Crantzii*. In the Grassington area doubtfully typic on the tabular lime quarries

of Bastow Wood, but true, small and early flowering on the rocky baulks by the river at Ghaistrills. At higher levels thereabouts *P. Crantzii* is abundantly dominant. (*P. verna* is in plenty in Feizor Wood and on Giggleswick Scar top above Cave Haw. It flowers a month before *P. Crantzii* which is here also. C.A.C.).

Potentilla Crantzii Beck. (*alpestris* Hall fil., *aurea* I. Kew., *maculata* Pourr., *rubens* Vill.)

Not in East Riding Flora. Dunnaw Cliff, Newton-in-Bowland, J.F.P. !; Outershaw (Woodd's list), Knipewood, Kettlewell, J.F.P.; Ghaistrills, Grassington, Id; has been referred to *P. verna* but seen *in situ* in the first flush of April bloom, the facies differs, two points striking the eye at once: (1) in *verna* a squat matting habit, in *Crantzii* a loose and trailing stemmed disposition of the new growth from the crevice-held root crowns; (2) the deeper livid-green, rather shiny, neat fingered leaves in *verna*, thinner textured and of a yellower green in *Crantzii*. Bastow Wood has *P. Crantzii* in a variety of forms according to time when viewed, May-June or August, on the west of the area intermingled with *P. erecta*, on the north-east with what has been called *verna*, and productive of a series of puzzling, individually varying plants that, call them by what name we may, are partial hybrids.

P. sterilis (L.) Garcke.

P. norvegica L.

Alien. Not in North Riding Flora.

P. palustris (L.) Scop. (**Comarum**).

Malham Tarn bog, W.W. !; Rombald's Moor, above Skipton, T. W. Edmondson; Old bed of Hodder at Newton-in-Bowland, J.F.P.

Alchemilla vulgaris L. agg.

A. hybrida Mill. (**A. pubescens** Lam.).

Ingleborough, C.E.S. Oxenber, W.A.S. Beckermonds, Outershaw, W.A.S.

A. pratensis Schmidt.

Grass Woods, Grassington, W.A.S. No doubt frequent throughout the county.

A. minor Huds.

Greenhow hill ! 1893. Micklefell, C.E.S., m.s. Above Greenfield towards Chew brook, Clough, G.C.D., *Nat.*, 1911, p. 322. Clapham, Ingleborough, G.C.D. Western crags of Ingleborough at \pm 2,200 feet. W.A.S. Forge Valley, W.A.S., 1932.

A. pastoralis Buser.

North-western crags of Ingleborough, W.A.S., 1931. Det. F. Jaquet.

Alchemilla alpestris Schmidt.

Penyghent, 2231 feet, J.F.P., 1906. Austwick, Moughton, Whernside and Ingleborough, W.A.S. This is no doubt common in low-lying districts as well as in the dales, but its distribution has not been worked out. W.A.S.

A. acutidens Buser.

Ingleborough, 1931, W.A.S. (Det. A. J. Wilmott). Grass Woods, Grassington, A. Malins Smith (Det. Wilmott).

A. arvensis (L.) Scop.

The statement in West Riding Flora about Settle is correct, it is very common on the limestone of this district. C.A.C.

A. alpina L.

Only in West Riding Flora. Descends to 800 feet W. West.

Agrimonia Eupatoria L.

var. *sepium* Brébiss. Little Dunnow Wood, Slaidburn, J.F.P., spn. ! Hedgerow between Smaws Wood and Newton Kyme, 1908, J.F.P. Wadworth, H.H.C., spn., 1908 !

A. odorata (Gouan) Mill.

Not in East Riding Flora. Rawthey Bank, 1889, Dr. E. J. Lumb, Herb. ! Bleaching Works, Kildale in Cleveland, 1890, and Forge Valley, W. W. Reeves, Y.N.U. Report, 1890. Bentham, *Nat.*, 1936, p. 48.

Acæna Sanguisorbæ Vahl. Alien.

Poterium Sanguisorba L.

P. officinale (L.) A. Gray.

P. canadense A. Gray. **P. polygamum** W. and K.
Recorded as aliens.

ROSA

[Editorial Note.—The publication by Lt.-Col. A. H. Wolley-Dod of his *Roses of Britain* in 1924 and his *Revision of the British Roses* in 1931 has necessitated the substitution of a new list of Yorkshire records in place of that drawn up for this work by Dr. Lees. The account which follows is based upon Lt.-Col. Wolley-Dod's publications ; the nomenclature and the sequence of species varieties and forms following his *Revision*. He has also kindly placed at my disposal a complete list of all Yorkshire roses in his herbarium. These

comprise the bulk of the records here published and include all those of Baker, Bailey, Rogers, Ward, Webster, Groves and Nicholson. To these have been added others supplied by Mr. E. B. Bishop for the neighbourhood of Holwick in Upper Teesdale. Records from Dr. Lees' account have been included wherever they seemed free from ambiguity, and their origin has been indicated.

The vice-comital distributions have been taken from Lt.-Col. Wolley-Dod's publications and he has added recent records so as to bring the list up to date. Bracketed vice-counties are those from which a plant has been recorded in the Floras but from which Lt.-Col. Wolley-Dod has not seen specimens. The addition of such records has not as a rule been attempted in the case of the varieties and forms, as less reliance can be placed on the correctness of old records for sub-specific units. All authenticated records for the county have been included, though these often refer only to the vice-county from which Lt.-Col. Wolley-Dod has seen and passed specimens. Several records included by Dr. Lees were similarly localised only by vice-counties. Doubtless a large number of entries are based on single gatherings and much more intensive collecting will be necessary before data become available as to the relative frequency of the varieties and forms.—W.A.S.]

R. arvensis Huds.

V.C. (61), 62, 63, 64, 65.

var. *vulgaris* Ser. V.C. 64.

f. *major* Coste. V.C. 62. To this probably belongs the plant recorded by Lees as var. *bibracteata* from the Permian about Tadcaster and Conisborough.

var. *ovata* (Léj.) Desv. V.C. 62, 63.

var. *laevipes* Greml. V.C. 62 or 65.

var. *gallicoides* (Déségl.) Crep. V.C. 62. Beckhole, near Goathland; H. Britten, 1936. (Det. A. H. W.-D.)

R. arvensis × **canina** (**R. Wheldoni** W.-Dod).

V.C. 63, Sprotborough; C. H. Waddell, 1901. (In herb., A. H. W.-D.).

R. arvensis × **micrantha** (**R. inelegans** W.-Dod).

V.C. 63 (identity uncertain).

R. spinosissima L.

var. *typica* W.-Dod, f. *pimpinellifolia* (L.) W.-Dod. V.C. (62), (63), 64, 65. This form with glabrous not hispid-glandular peduncles is stated by Lees to be 'the only growth which seems to be developed on our inland limestone areas.'

f. *rosea* Koch., Winch Bridge, Teesdale; C. M. Rob, 1934, conf., E.B.B.

var. *Ripartii* (Déségl.) N.E. Br. ? V.C. 65.

R. spinosissima × **canina** (agg.).

× *R. hibernica* Temp. V.C. 65. (? 64, Grass Woods, *vide infra*) Grassington.

× *R. glabra* (Baker) W.-Dod. V.C. 62. Thicket at Ayton; W. Mudd, 1864. V.C. 65. ?

- × *R. Margerisoni* W.-Dod. V.C. 64. On steep rocky bank of scrub, some third of a mile above and south of Kettlewell, not far from highway; S. Margerison, *circa* 1903, *Nat.* 1911, p. 417. Grass Woods, Grassington, between Dewbottom and Gregory Scars; J.F.P. (as *laevigata* Baker) 'Untypical,' A.H.W.-D. See *Rev. Brit. Ros.*, p. 16. Originally named × *R. hibernica* by W.-D., and specimens from the same bushes shown to me (W.A.S.) by the finder in 1924 appear to agree best with that identification.

R. spinossima × **villosa** (agg.).

- × *R. involuta* (Sm.) W.-Dod. V.C. 64, 65. Near Richmond, J. Ward, 1870.
 × *R. Sabini* (Woods) W.-Dod. V.C. 62, 64, 65. Sowerby, near Thirsk; J.G.B., 1864. Crookacre Scar, Kettlewell; A. Ley, 1904. Knife Wood, Kettlewell; W.A.S., 1931. Grass Woods, Grassington; W.A.S., July 14th, 1923 (conf. A.H.W.-D.). By R. Swale near Paper Mills, Richmond; F. A. Rogers.
 × *R. gracilis* (Woods) W.-Dod. (incl. *R. Robertsoni* Baker). V.C. 62, 65. Near Thirsk; W. Barclay, 1904. Shown to W.A.S. near Thirsk by the late T. J. Foggitt; July 7th, 1923 (conf. as *R. Robertsoni* by A.H.W.-D.). Aysgarth Force; W. M. Rogers, 1890.

R. canina L.

V.C. 61, 62, 63, 64, 65.

- var. *lutetiana* (Lem.) Baker (inc. var. *separabilis* (Déségl.)). V.C. 62, 65.
 var. *sphaerica* (Gren.) Dum. V.C. 62, 64.
 var. *flexibilis* (Déségl.) Rouy. V.C. 62.
 var. *senticosa* (Ach.) Baker. V.C. 62. Lees records this variety from barren gritstone soils about Adel and about Hookstone Crag, and the Pannel-Follifoot area.
 f. *oxyphylla* (Rip.) W.-Dod. V.C. 64.
 f. *mucronulata* (Déségl.) W.-Dod. V.C. 65. ?
 var. *spuria* (Pug.) W.-Dod. (= *insignis* W.-Dod non Déségl. and Rip.). V.C. 62, 64. Hedge, Pannal, near Harrogate; C. Bailey, 1886.
 var. *ramosissima* Rau. V.C. 64.
 var. *dumalis* (Bechst.) Dum. V.C. 62. A rose collected by the Tees near Holwick, Upper Teesdale by E. B. Bishop was identified as *rubelliflora* (Rip.) by W.-Dod about 1922, but he has not admitted that name into his *Revision* (see p. 33 thereof, under var. *dumalis*) nor is *dumalis* recorded in his list for V.C. 65.
 f. *cladoleia* (Rip.). V.C. 62.
 f. *viridicata* (Pug.) Rouy. V.C. 64. Hedge, Pannal, near Harrogate; C. Bailey, 1886.
 var. *stenocarpa* (Déségl.) Rouy. V.C. 61, 65.
 var. *biserrata* (Mér.) Baker. V.C. 64.
 var. *squarrosa* Rau. (*R. Hailstoni* Baker ?). V.C. 63. ?
 var. *sylvularum* (Rip.) Rouy., f. *adscita* (Déségl.). Rouy. V.C. 65.
 var. *verticillacantha* (Mér.) Baker. V.C. 62, 65. Also recorded by Lees: from roadside Knipewood, Kettlewell.
 var. *Schottiana* Ser. V.C. 65. Near Richmond, Yorks.; J. Ward, 1876.
 var. *Blondæana* (Rip.) Rouy. V.C. 62 ? 65 ?
 f. *vinacea* (Baker) Rouy. V.C. 62. Hedges near Thirsk; J.G.B., 1864.
 f. *Beatricis* (Burn. and Gremli) Rouy. V.C. 65. Aysgarth; J. A. Wheldon, 1896 (as *R. celerata* Baker ?).

(To be continued)

WATKINS & DONCASTER

NATURALISTS,

36, STRAND, LONDON, W.C.2

(Five doors from Charing Cross),

P.O. Box 126.

Telephone: Temple Bar 9451.

Keep in stock every description of

APPARATUS, CABINETS, BOOKS & SPECIMENS

for Collectors of

BIRDS' EGGS, BUTTERFLIES, MOTHS, Etc.

Catalogue (96 pages) sent post free on application.

REVUE DE GÉOLOGIE

et des Sciences Connexes.

Review of Geology and
the connected Sciences.

Rundschau für Geologie
und verwandte Wissenschaften

Rassegna di Geologia
e delle Scienze affini.

Sponsored by the SOCIÉTÉ GÉOLOGIQUE DE BELGIQUE, with the coöperation of the FONDATION UNIVERSITAIRE DE BELGIQUE.

A monthly publication giving abstracts, clear but concise and not controversial, of original papers appearing in many widely distributed publications. Abstracts prepared by well-trained collaborators. Essential to the student reader and the investigator, enabling him to keep closely in touch with the progress and discoveries made over the whole world. Included are not only those in Geology proper, but also in the related sciences thus covering 18 Departments. In this work scientific institutions, geological surveys and many individuals coöperate, thus establishing close relations between the geologists of the whole world.

Secrétariat Général: Institut de Géologie, Université de Liège (Belgique).

Annual subscription price:

35 Belgas, sent to Mr. G. TIBAUX, 35 rue des Armuriers, LIÈGE, BELGIUM,
also through a bookseller.

COLLECTING APPARATUS.

Nets

Entomological Apparatus

Larva-Cages

Vivaria

Vascula

Plant-Presses, etc.

Pond-Nets

Collecting Tubes

Aquaria

Geologist's Apparatus

Dissecting Instruments

Microscopes, etc.

All requisites for indoor or outdoor work in every branch of
Natural History.

FLATTERS & GARNETT, LTD.,

309 OXFORD ROAD, MANCHESTER.

Issued bi-monthly, Illustrated with Plates and Text Figures.
To Subscribers, 12s. 6d. post free.

The Scottish Naturalist

With which is incorporated 'THE ANNALS OF SCOTTISH NATURAL HISTORY'

EDITED BY

A. C. STEPHEN, D.Sc., F.R.S.E.

Keeper, Natural History Department, Royal Scottish Museum.

AND

PERCY H. GRIMSHAW, I.S.O., F.R.S.E., F.R.E.S.

Formerly Keeper, Natural History Department, Royal Scottish Museum.

Assisted by:—Professor JAMES RITCHIE, M.A., D.Sc., F.R.S.E.; EVELYN V. BAXTER, F.Z.S., H.M.B.O.U.; LEONORA J. RINTOUL, F.Z.S., H.M.B.O.U.; H. S. GLADSTONE, M.A., F.R.S.E., F.Z.S.; C. H. O'DONOGHUE, D.Sc., F.R.S.E.; ANDERSON FERGUSON, F.R.E.S.; A. R. WATERSTON, B.Sc.

Subscriptions should be addressed to the Publishers,

Messrs. OLIVER & BOYD, LTD., Tweeddale Court, Edinburgh.

A New Work by the Author of *YORKSHIRE* in the
Borzoi County Histories.

ROMAN YORKSHIRE

208 + 12 Pages, Demy 8vo, with 8 Full Page Plates, and 8 Diagrams and Maps
in the text, bound in Art Cloth Boards, 7/6 net or post free 8/-.

BY

F. R. PEARSON, B.A.

SENIOR HISTORY MASTER AT BRIDLINGTON SCHOOL

WITH FOREWORD BY

THE RT. HON. THE VISCOUNT HALIFAX

The Contents include :—

The Invasion of Britain and the Advance of the Frontier (A.D. 43-71)

The Invasion of Yorkshire and the Foundation of Eboracum (A.D. 71-77)

The Subjection of Yorkshire and the Problem of the Pennines (A.D. 77-85)

Some Branches of Ermine Street in Yorkshire

Some Roman Roads and Stations in North and East Yorkshire

Some Roman Roads and Stations in West Yorkshire

Roman York

Trade and Industry in Roman Yorkshire

The Coast Defences of Roman Yorkshire

Obtainable through all booksellers

*An eight-page illustrated pamphlet will be gladly sent by the publishers,
free of charge*

A. BROWN & SONS, LIMITED

5 FARRINGDON AVENUE, LONDON, E.C.4

Printed by A. BROWN & SONS, LTD., Perth Street West, Hull, and published by
A. BROWN & SONS, LTD., at 5 Farringdon Avenue, in the City of London.
March, 1938.

The NATURALIST

A MONTHLY
ILLUSTRATED JOURNAL

PRINCIPALLY FOR THE NORTH OF ENGLAND

Edited by

V. H. PEARSALL, D.Sc., F.L.S., and W. R. CRIST, B.Sc.,
The University, Leeds.

with the assistance as referees in special departments of

H. B. Booth, F.Z.S., M.B.O.U.

J. M. Brown, B.Sc., F.R.E.S.

W. H. Burrell, F.L.S.

Chris. A. Cheetham, F.R.E.S.

W. J. Fordham, M.R.C.S., L.R.C.P.,

D.P.H.

Riley Fortune, F.Z.S., F.R.P.S.

Professor A. Gilligan, D.Sc., F.G.S., M.I.M.E.

Mrs. Elsie M. Morehouse.

Thos. Sheppard, M.Sc., F.G.S., F.Z.S.

T. W. Woodhead, Ph.D., M.Sc., F.L.S.

Contents

PAGE

Anglo-Saxon Cemeteries in East Yorkshire, Part II (Illustrated)—T. Sheppard, M.Sc.	109-114
Hypoxylon—T. Petch	115-118
Mineral Deposits in the Settle-Malham District, Yorkshire (illustrated)—A. Raistrick, Ph.D., M.Sc., F.G.S.	119-125
Tetraphis pellucida Hedw. Fruit—Chris. A. Cheetham	125
Scandinavian Boulders found in East Yorkshire —T. Sheppard, M.Sc., F.G.S.	126
Zoological Notes from the Scarborough District —W. J. Clarke, F.Z.S.	127-128
Short Note	128
Whitby and District Records—H. Britten	129-130
In Memoriam—Charles Waterfall	130
Field Note	130
Reviews and Book Notices	131
News from the Magazines	131-132
Illustrations	109, 113, 121

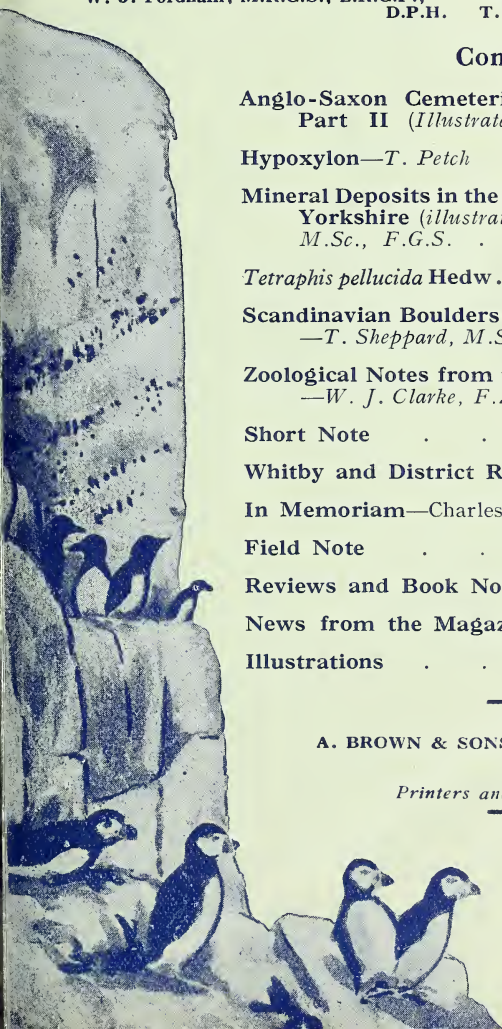
LONDON:

A. BROWN & SONS, Ltd., 5 Farringdon Avenue, E.C.4.
And at Hull.

Printers and Publishers to the Y.N.U.

PRICE 1/6 net.

Prepaid Subscription
15/- per annum.



A new work of prime importance to all interested in
Ornithology

A SPARROW-HAWK'S EYRIE

BY

W. W. NICHOLAS, F.R.P.S.

WITH FOREWORD BY

BRIAN VESEY-FITZGERALD, F.L.S., F.G.S.
NATURALIST EDITOR OF *THE FIELD*

xviii + 75 pages and 17 plates. Crown 4to.

cloth **7'6** net

This book, which is profusely illustrated from photographs taken by the author and his friend, forms the study of a Sparrow-hawk's eyrie from the hatching of the eggs to the flying of the young. In his foreword Mr. Vesey-Fitzgerald says :—" Mr. Nicholas has made a most careful study of the bird and he has in this book added very considerably to the sum total of our knowledge. And more knowledge of such birds as this very beautiful hawk is urgently needed."

OBTAINABLE FROM ALL BOOKSELLERS

*A four-page illustrated pamphlet will be gladly sent by the publishers,
free of charge.*

A. BROWN & SONS, LIMITED
5 FARRINGTON AVENUE, LONDON, E.C.4.
AND AT HULL

ANGLO-SAXON CEMETERIES IN EAST YORKSHIRE¹

PART II

T. SHEPPARD, M.Sc.

Most of the objects described in these notes came from an Anglo-Saxon cemetery on the road-side at Staxton, a village on the north edge of the Wolds, seven miles west of Filey. The slope of the hill consists of fine sand and gravel, in the upper part of which the relics were found.



The Staxton Collection before treatment.

I first heard of the discovery in April, 1937, when, during the construction of a petrol pit for Messrs. Major & Co., of Hull, human bones were found. I went over and brought the bones away, and also some of the objects already figured and described. In some way, however, certain objects had reached the Museum at Scarborough, and in some cases part of one object was in Scarborough and the remainder at Hull. Eventually, by a more than an equivalent exchange, the Scarborough objects, then in a more or less fragmentary condition, were brought to Hull, and, after restoration and assembling, are now described.

Unfortunately, at that time no particular care had been taken to note the relative position of any finds with each other,

¹ For Part I, see *The Naturalist*, January 1938, pp. 1-23.

or with the skeletons. And it is apparent that the first finds, nearest the road, were the richest, and doubtless some of the more important of those described in the first pages of the first section of these notes, then occurred.

A few spears, etc., of iron, evidently found with the male skeletons, were not apparently associated with any of the bronze ornaments and jewellery found with the female skeletons.

These iron weapons, when I first saw them at Scarborough, were much corroded, and most of them were broken. They have since been treated and cleaned, and it is possible to give illustrations of them in their complete form. Each of the three spear heads contains remains of the original wood shaft in the socket.

No. 83. Is a fine dagger-shaped spear head, with a split socket. The total length is 11 inches. The blade is $6\frac{1}{2}$ ins. long, $1\frac{1}{2}$ ins. at the widest part, and the socket $4\frac{1}{2}$ ins. long, gradually widening from the blade, where it is $\frac{1}{2}$ in. across, to the end, where it is $\frac{3}{4}$ in. wide.

No. 84. A similar, but smaller spear, the extreme point of which is missing. Its total length is $8\frac{3}{4}$ ins., the blade being $4\frac{1}{2}$ ins. in length and 1 in. at its widest part. The socket is particularly well made, and is split, and, as with the other examples, gradually widens from the blade downwards.

No. 85. A plain lance-shaped spear, $5\frac{3}{4}$ ins. long, the blade being $2\frac{3}{4}$ ins. long and 1 in. at the widest part. It is in very good condition.

No. 86. Remains of a scram-a-sax, or one-edged knife, slightly curved, $5\frac{1}{2}$ ins. long, and the cutting edge is much corroded.

No. 87. Apparently a key, the shaft being $5\frac{1}{2}$ ins. in length, the bent portion at one end forming the ward.

No. 88. This object looks as though it has had a pair of hooks, or may be a double key, or merely something hung from the girdle to hang keys or other objects upon. I have seen nothing with two hooks quite like this, although Mr. E. T. Leeds has a record of a double key, of bronze, joined by an iron strip. The length of this specimen is $6\frac{3}{4}$ ins., the hook which remains being $1\frac{1}{2}$ ins. in length.

No. 89. This consists of five indeterminable pieces, two of which have the end bent round in the form of a loop, after the manner of the loops on the pins of the Iron-age brooches. They may have hung on the hook just referred to.

No. 90. Of particular importance is the small bucket, parts of which were in Scarborough, and others at Hull, in fact some were figured in the first article (Figs. 31, 32), and were then described as part of a small bucket. At both places were

some of the original staves, of which the bucket was made, before being bound with bronze strips. These staves had naturally contracted and become warped, though were best preserved when in contact with the bronze bands.

Pieces of the wood were submitted to the authorities of the Royal Botanic Gardens, at Kew, who identified them as of Yew (*Taxus baccata* L.). Mr. N. B. Helmsing kindly gave us a plank of Yew, and from this Mr. H. Gibson, of Beverley, has been successful in reconstructing the bucket, of the same size, and with the staves of the same dimensions, as those of the original vessel. To this it has been possible to affix the bronze bands and uprights, enabling the original size and appearance of the object to be clearly seen.

The bucket is cylindrical or drum shaped, and has the same diameter ($3\frac{1}{4}$ ins.) at the top, centre, and base. It is $2\frac{3}{4}$ ins. in height, and the original staves are $\frac{1}{8}$ in. in thickness and vary in width from 1 in. downwards. The wood at the mouth of the bucket is chamfered, and cut to about half its thickness, in order to receive a curved piece of bronze forming the lip. This extends inside to a depth of $\frac{1}{8}$ in., and is rounded at the top.

There are three bands, the top one is $\frac{3}{4}$ in. deep, the centre is $\frac{3}{8}$ in., and the bottom $\frac{1}{2}$ in. These horizontal hoops are perfectly plain, and are pierced here and there to receive the bronze rivets for attachment to the woodwork. The hoops are made of thin but strong bronze. They are held in position by upright strips of bronze, $\frac{3}{8}$ in. wide; two are complete from top to bottom, the others are represented by parts only. The positions of the uprights are shown by holes in the horizontal pieces, one for each band, when they were riveted together. Each of these uprights is decorated on each side with a row of V-shaped punch marks, 16 to the inch, which are precisely similar to those on the Chatelaine, No. 91. When complete there may have been four of these, but of this it is uncertain.

As to whether the bucket had a handle or not, it is difficult to say, as there are no traces of escutcheons, nor of a handle. Near the top of the upper band are three large perforations for rivets, which suggest a handle of wood, and on the opposite side are two perforations, also too wide apart for the narrow perpendicular strips.

An almost exactly similar example from the well-known Saxon Cemetery at Highdown, Sussex, and now in the Worthing Museum, has a bronze half-hoop handle, and two upright supports are shaped for the purpose of attachment. There are also two small pieces of bronze, about 1 in. in length, bent over the top of the bucket, evidently to keep the upper hoop in position. This feature occurs in the Staxton bucket. The

Worthing example, which does not seem to have been figured or described, is $4\frac{1}{2}$ ins. high and $4\frac{1}{4}$ ins. in diameter, with four hoops of bronze.

In the same Museum, also from Highdown, is a larger bucket, 5 ins. high and $6\frac{1}{8}$ ins. wide, with five iron hoops held together by two upright pieces of iron. In this case, however, there is no evidence of a handle, nor are the uprights provided with escutcheons or other fasteners.

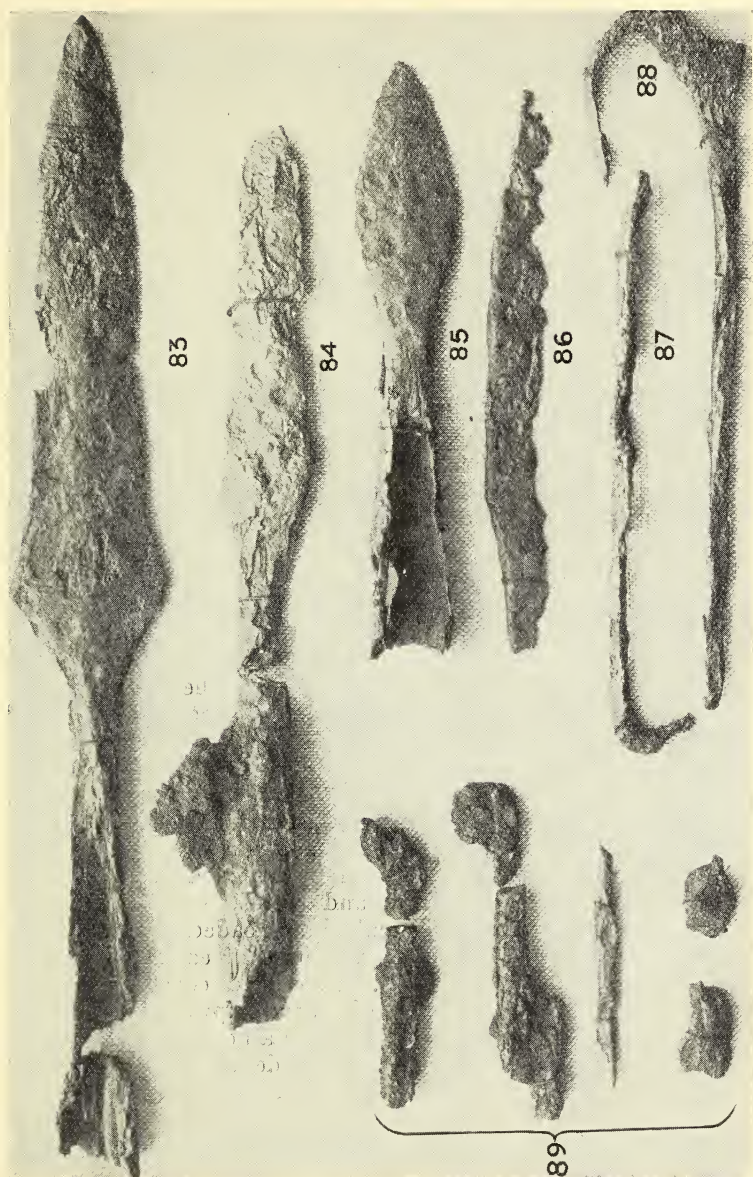
The appearance of this small bucket in Yorkshire is important, as such 'few records as are known have occurred in the South of England, and nothing of the kind appears previously to have been seen in these parts.'

There was a distinct importation of southern forms in the Staxton hamlet, notably the rayed-fibulae, as will be seen later. Whether these occurred along 'the Great Road leading to the Wall' as has been suggested by Mr. Leeds, or came by sea, is not certain. Staxton would easily be reached by the occupants of a boat from the South Landing near Filey.

No. 91. Perhaps one of the most interesting finds was a pair of chatelaines, which has features apparently not previously noticed.

Reference has already been made to the relative abundance of chatelaines on this site. The pair now described, as in some other instances, was apparently new when buried. But, instead of the two halves being joined together at the top by a half-loop of bronze, in this case the two bronze hangers were connected by a bronze cylinder, enclosed in a bronze tube. Among the various objects found at the same time was a curious half-moon shaped object, in bronze, which Mr. E. T. Leeds suggests was probably the upper part of this pair of chatelaines. On carefully placing the objects together, it is apparent that Mr. Leeds' conjecture is correct; a fact borne out by the decoration on the bronze, which is identical. Also, there is the circumstance that at the top of each valve of the chatelaine are the remains of a small iron rivet, which continues in the two projections on the half-moon shaped object.

The two halves are each $5\frac{1}{4}$ ins. long, the perforated parts, (presumably for attaching some objects), are different in shape from those already found in the district. The flat base of each of these is $1\frac{1}{2}$ ins. wide, the squarish projections being $1\frac{1}{4}$ ins. high. Each is perforated by two rectangular holes, though on one valve these are much smaller than on the other, and the circular portions at the top of each are perforated with a small circular hole, evidently for attachment to something. The decoration consists of impressions made by semi-circular punches, and V-shaped punches, and, at the lower extremity, with large 'arrow-shaped' punches. There is a ridge at the base of each valve, beneath which are many



circular punches, and the others are V-shaped. The decoration on each is quite different in the smaller detail.

The bronze tube or swivel, connecting the two, is $\frac{3}{4}$ in. in length and $\frac{1}{4}$ in. thick, and has apparently been held in position with small iron rivets, traces of which remain.

The top ornament is $1\frac{3}{4}$ ins. wide and 1 in. high. It has three perforations which give the appearance of half a wheel. This is decorated by both circular and other punch marks precisely similar to those on the valves. Projecting from the lower part are two circular pieces of bronze with the remains of iron rivets.

Thus, whatever may have been the purpose of these *chatelaines*, the construction of the present unique example must be borne in mind. The pair evidently rules out the suggestion that they form the ends of a bag or purse-like receptacle—a fact also shown by another pair from this cemetery, already described, which were found stuck together, and clearly had nothing between at the time of burial (see Fig. 15).

No. 92. This is a fine and particularly solid cruciform fibula, which, as with the well-known Londesborough examples, was quite new and unworn when buried with the owner. It is 5 ins. long, $2\frac{1}{2}$ ins. across the arms at the top, $1\frac{1}{2}$ ins. across the projection in the centre, slightly larger across the projection lower down, and is just over 1 in. wide at the bottom. In the centre the brooch is raised in a half loop in order to take the thickness of the cloth, and behind this the flat part with the hole for the iron pin, and the catch for the point, are cast in the solid, and are quite substantially made. Generally speaking, the lower part of the fibula has the horse-head motif. The animal's eyes have been represented by two protruberances, though the nose has become debased. Round the square end of the raised part in its centre, and round the edge of the fibula generally, are small punch marks made by the same tool as that used on the bucket and *chatelaine*.

Nos. 93, 94. A pair of small cross-headed fibulæ with no trace of the horse-head motif, the base of each ending in a spoon-shaped piece of bronze. The head consists of three lobes; the centre of each fibula is curved upwards to take the cloth, and each has the projection with a hole through, for the pin, and the catch for the pin, and evidently these were worn together as a pair. The fronts of these brooches seem devoid of decoration beyond a slightly raised band near the base, and they do not seem to have been worn very much before burial. Each is $2\frac{3}{4}$ ins. long and $1\frac{1}{4}$ ins. wide across the arms.

(To be continued)

HYPOXYLON

T. PETCH

THE genus *Hypoxylon* contains conspicuous hard, woody, or carbonaceous fungi which grow on wood or bark, and may be globose or form effused pulvinate or flat crusts. At first they are usually coloured, but when old they become black. The commonest in this country are *Hypoxylon coccineum*, which forms red globose stromata on Beech, and *Hypoxylon multi-forme*, which forms reddish brown pulvinate or effused stromata on Birch. They have a thin outer coloured layer, known as the ectostroma, and a usually black internal tissue, the entostroma. The first appearance of a *Hypoxylon* is, in general, as a thin coloured layer, usually red or yellow, on the surface of the host; this is the ectostroma, and it bears conidia. Then the black entostroma develops beneath the coloured layer, so that the latter forms the outer layer of the mature fungus. *Hypoxylon* is a compound pyrenomycete, and the perithecia, which contain the asci and ascospores, lie in a single layer near the surface of the stroma. In some species the stroma is tuberculate, with a small elevation over each perithecium, while in others it is even, without such indications of the underlying perithecia, but in the latter such perithecial elevations may occur at the margin of the stroma. It is usual to refer to these elevations as the apices of the perithecia, but though that is convenient it is not quite correct.

The genus includes a large number of species, but most of them are tropical. Their separation is difficult, because many of their characters, *e.g.* shape of stroma, colour, size and prominence of perithecia, etc., are highly variable. The British species, however, are few in number and present less difficulty. As a primary character, Miller has adopted the shape of the ostiolum or mouth of the perithecium. This must not be confused with the rounded apex of a projecting perithecium. The ostiolum is situated on the top of such an elevation. It may be projecting above the surface of the stroma as a small blunt cone, *i.e.*, papillate, or not projecting, but appearing as a minute pinhole, *i.e.* umbilicate. In addition, one species, which has been found in England but is doubtfully British, can be distinguished by the fact that the apex of the perithecium is truncate, so that the papillate ostiolum is seated on a flat disc with an upturned margin.

After the foregoing primary division, reliance must be placed chiefly on the dimensions of the ascospores. The ascospores are dark brown or almost black, when mature, with an elongated hyaline furrow on one side. As the asci mature successively, a perithecium will usually yield hyaline immature spores, as well as mature spores. Measurements should be made of mature spores only, as the size and shape

may alter during maturation. The asci in all British species are long cylindrical, with a long tapering stalk about half the total length.

A revision of the British species of *Hypoxylon* was published by Dr. J. H. Miller in *Trans. British Mycol. Soc.*, XV, pp. 134-154 and XVII, pp. 125-146, and the following descriptions are taken chiefly from those papers.

KEY TO THE BRITISH SPECIES OF *Hypoxylon*

- A. Ostiola on an apical disc *stygium*.
- B. Ostiola not on an apical disc :
 - 1. Ostiola projecting, or papillate—
 - (a) Ascospores not over 10μ in length :
 - Stroma hemispherical, 2-4 mm. diameter ; on Beech *cohaerens*.
 - Stroma pulvinate to widely effused ; on Birch *multiforme*.
 - Stroma globose to hemispherical, slightly effused on wood ; on Beech *rutilum*.
 - (b) Ascospores over 10μ in length :
 - Stroma widely effused ; spores $10-15\mu$ long *serpens*.
 - Stroma small, 2-4 mm. ; spores $15-22\mu$ long *semi-immersum*.
 - Stroma small, 10-15 mm. long ; spores $26-34\mu$ long *udum*.
 - 2. Ostiola not projecting, umbilicate—
 - (a) Ascospores $6-9\mu$ long, stroma globose to hemispherical, red to brown *howeianum*.
 - (b) Ascospores $10-12\mu$ long, stroma pulvinate on bark to widely effused on wood *rubiginosum*.
 - (c) Ascospores $12-15\mu$ long :
 - Stroma bright red at maturity ; on Beech *coccineum*.
 - Stroma purplish brown at maturity ; on Hazel, Alder *fuscum*.
 - (d) Ascospores $16-20\mu$ long ; stroma clay-coloured at maturity *argillaceum*.

1. *H. stygium* (Lév.) Sacc. Stroma effused, flattened, black, carbonaceous ; apices of perithecia evident, truncate ; ostiola papillate, each seated on an apical disc ; ascospores oblong to cymbiform, dark brown, $5-8 \times 2.5-3\mu$. On dead wood.

This is a tropical species, which was recorded under the name *H. marginatum* from Chatsworth, where it occurred on wood in the Great Stove, *i.e.* the large hot-house. It was stated that the wood on which it grew was not of foreign origin, but that does not exclude the possibility that the fungus may have been introduced with tropical plants. Miller regards it as probably imported, and that *H. stygium* does not occur in Europe. Massee recorded it from Scarborough, but his specimen is not available. It was recorded again for the Whitby district on the B.M.S. Fungus Foray of 1904 as *H. effusum* Nits., the description of which, in Saccardo, *Sylloge Fungorum*, is undoubtedly that of *H. stygium* and was drawn up by Saccardo from a specimen found in a greenhouse in Italy. The Whitby specimen is not available. This species is not likely to occur in this country, except on wood in greenhouses.

2. *H. cohaerens* (Pers.) Fr. Stroma on bark or decorticated wood, usually closely gregarious to connate, hemispherical to turbinate and constricted below, 2-4 mm. diameter, 1-2 mm. thick, light brown varying to deep mahogany brown, finally black; ostiola papillate; ascospores dark brown, elliptical, $9-11 \times 4-5\mu$ (mostly $10 \times 4\mu$). On Beech, doubtfully reported on other hosts. Apparently rare in England.

3. *H. multiforme* Fr. Stroma transversely crumpled from bark, or widely effused on decorticated wood; reddish brown, becoming dark brown and finally black and carbonaceous; perithecia distinctly prominent, ostiola papillate; ascospores elliptical, inequilateral, dark brown, $9-11 \times 3.5-5\mu$ (mostly $10 \times 4\mu$). Conidial layer variable, usually a dirty yellow. On Birch, common; rarely on other hosts.

4. *H. rutilum* Tul. Stroma hemispherical, 2-3 mm. diameter, 1-2 mm. thick, when on bark, irregularly effused, 3-10 mm. diameter, 1-1.5 mm. thick, when on decorticated wood; light reddish brown when young, dark red when mature, almost black when very old; perithecia crowded, very small, ostiola papillate; ascospores elliptical, inequilateral, $7-10 \times 3.3-4\mu$. Chiefly on Beech, but reported on other hosts. Distinguished from *H. coccineum* by its papillate ostiola and smaller ascospores.

5. *H. serpens* (Pers.) Fr. Stroma widely effused, smooth, flattened or irregularly pulvinate; on smooth wood, thin, with crowded perithecia, on rough wood or bark much thicker, very irregular, with larger perithecia; at first dirty white, becoming purplish brown and finally almost black; ostiola papillate; ascospores elliptical, inequilateral, almost opaque when mature, $10-15 \times 5-7\mu$. On various deciduous trees; generally distributed.

6. *H. semi-immersum* Nits. Stroma on decorticated wood, or erumpent through bark, flat, irregularly effused, orbicular or elongate, $2-15 \times 2-8$ mm., 1-2 mm. thick, sometimes containing only one or two perithecia, the perithecia seated partially in the wood; white to light grey at first, black when mature; perithecia large, ostiola papillate; ascospores deep brown when mature, elliptical, inequilateral, $17-20 \times 10-12\mu$. On Oak, Beech and Elm; apparently rare in England, but probably overlooked.

7. *H. udum* Fr. Initial stroma dirty white to grey, byssoid; mature stroma black, carbonaceous, small orbicular to oblong, 2-4 mm. wide, 10-15 mm. long, perithecia clearly evident; on very soft wood the perithecia are almost immersed, on hard wood superficial; ostiola distinctly papillate; ascospores oblong cymbiform to slightly fusoid, dark brown, $26-34 \times 9-11\mu$. On Oak; not common.

8. *H. howeianum* Peck. Stroma globose to hemispherical,

symmetrical except when crowded, 3-12 mm. diameter, 3-8 mm. thick, bright red varying to reddish purple or brown, almost black when old ; internally satiny black with faint concentric zones ; ostiola umbilicate ; ascospores elliptical, inequilateral, almost opaque, $6.9 \times 3.5 \mu$. On various deciduous trees, Oak, Hazel, Willow, etc.

9. *H. coccineum* Bull. Stroma globose to hemispherical, 2-8 mm. diameter, distinctly roughened when mature by the prominent perithecia, brick red, becoming brownish-black when old ; ostiola umbilicate ; ascospores elliptical, inequilateral, opaque at maturity, $11.15 \times 5.7 \mu$. On Beech, but has occasionally been reported on other deciduous trees ; common.

10. *H. rubiginosum* (Pers.) Fr. Stroma pulvinate to effused, indefinite in extent ; young stromata fleshy-leathery, when mature woody, crumbling when very old but never carbonaceous ; bright red when young, becoming purplish red to red brown, black when old ; perithecia variable in size, depending upon their distance apart in the stroma ; ostiola umbilicate ; ascospores dark brown when mature, elliptical, inequilateral, $9.12 \times 4.6 \mu$. On almost all deciduous trees, Ash, Birch, etc.

11. *H. fuscum* (Pers.) Fr. Stromata solitary or gregarious, hemispherical or depressed, 2-4 mm. diameter, 1-3 mm. thick, or (on decorticated wood) flattened, 1-3 cm. long, 1 mm. thick ; young stromata purplish, becoming brownish purple or light purple grey ; perithecia not prominent, ostiola umbilicate ; ascospores elliptic, inequilateral, nearly opaque, $12.15 \times 5.7 \mu$. On Hazel and Alder ; common.

12. *H. argillaceum* (Pers.) Berk. Stroma globose to hemispherical, usually solitary, 2-5 mm. diameter, roughened by the projecting perithecia, light clay-coloured, internally black ; ostiola umbilicate ; ascospores broadly cymbiform to sub-equilateral when mature, nearly opaque, $17.20 \times 8.10 \mu$. On Ash, but has been reported on other trees ; not common.

Miller transfers to *Hypoxylon*, *Nummularia bulliardi* Tul. as *H. nummularium* Bull., and *Ustulina vulgaris* Tul. as *H. ustulatum* Bull.

SOME SYNONYMS (DET. MILLER)

H. atropurpureum Fr. = *H. multifforme* Fr.

H. confluens Tode, of British authors = *H. semi-immersum* Nits.

H. crustaceum Nits. = *H. multifforme* Fr.

H. effusum Nits. = *H. serpens* (Pers.) Fr., but the description in Saccardo, *Sylloge Fungorum* and the figure in *Fungi Italici*, No. 572, are *H. stygium*.

H. majusculum Cooke = *H. coccineum* Bull.

H. marginatum, of British authors = *H. stygium* (Lév.) Sacc.

H. miniatum Cooke = *H. rutilum* Tul.

H. multifforme var. *effusum*, of British authors = *H. rubiginosum* (Pers.) Fr.

H. purpureum Nits. = *H. rubiginosum* (Pers.) Fr.

MINERAL DEPOSITS IN THE SETTLE-MALHAM DISTRICT, YORKSHIRE

A. RAISTRICK, Ph.D., M.Sc., F.G.S.

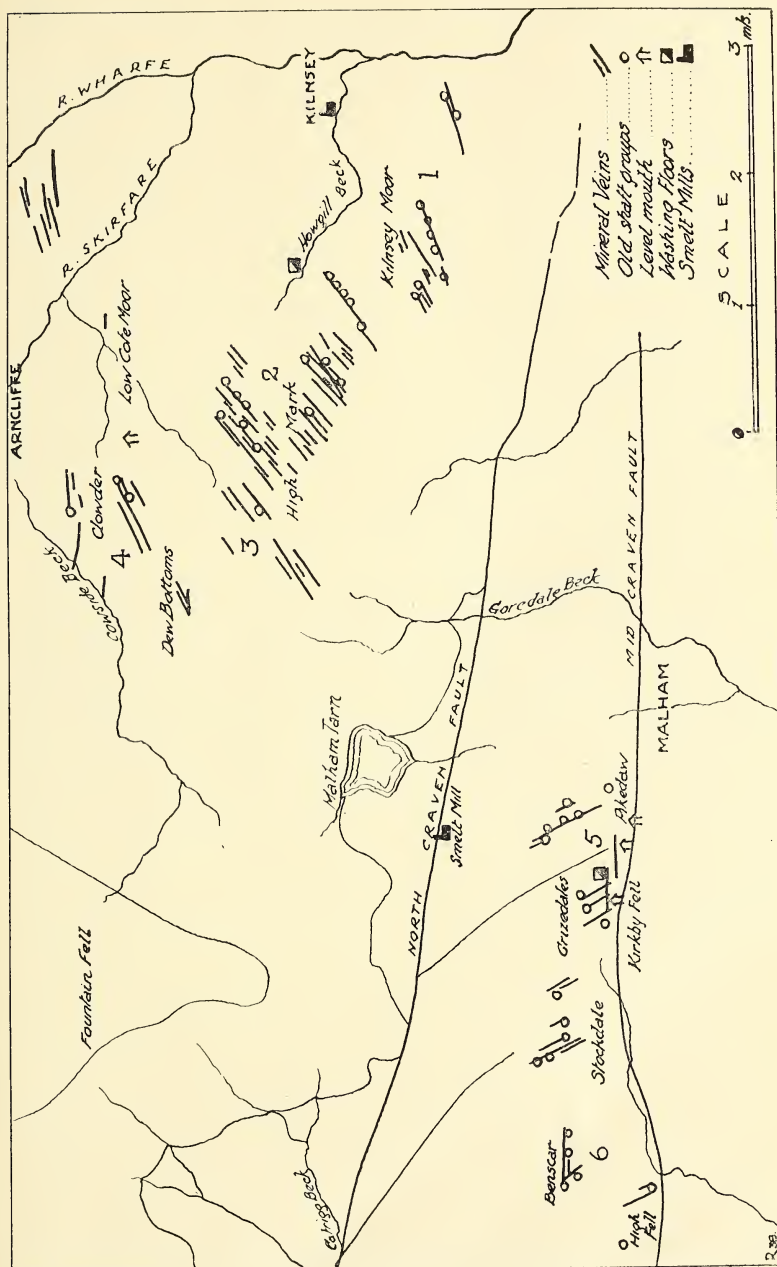
IN the Carboniferous Limestone area that stretches westward from the upper Wharfe valley to the valley of the Ribble, there are a large number of old mine shafts and workings, which, though a few of them are fairly well known, seem never to have received any attention in the literature of the district. It can be said at once that there is no documentary material for a history of the great majority of these workings, but examination of the spoil heaps around the shafts, and of the veins where they can still be seen, gives evidence of a surprising number of veins and strings of ore, and a very widespread search for them, evidently covering a long period. In this short note such references as there are will be brought together, and the nature and content of the veins given brief notice.

It has been said occasionally that the monks of Fountains Abbey worked the minerals, both coal and lead, of Fountains Fell and Malham Moor, but though the Fell was granted to them in the fourteenth century, there is no evidence that they opened any of the workings, either of coal or lead, in this area. It is perhaps remarkable, as in other areas granted to them, Greenhow Hill, and parts of Mashamshire and Wensleydale, they wrought both lead and coal, fairly extensively. Kilnsey was held by them as their grange for this part of Yorkshire, and the records of inquisition into the revenues and customs of the Abbey show that they made extensive use of Fountains Fell and Malham Moor as a source of wool and fish, but there is no mention of minerals as part of the produce of the area. On the other hand, there is some evidence of mining in the monastic period in the Arncliffe district adjoining, where many ancient mine refuse dumps were reworked about fifty years ago, in the course of which work a coin of Edward I or II, 1272-1327, was obtained from the heaps, and two rather similar coins or tokens have been obtained from among the bell-pit workings near Grassington. The monks of Bolton Priory purchased the lead mines at Appletreewick in A.D. 1300, and along with others in the township of Thorpe, worked them between A.D. 1300 and 1405.

The great period of mining activity and expansion started soon after A.D. 1600 and during the seventeenth century practically all the mining areas in the Dales had at least a few sites being worked. This seems to be the period in which much of the bell-pit working of Malham Moors was carried on. Hurtley, writing in 1786 (*A Concise Account of some Natural Curiosities in the Environs of Malham, in Craven, Yorkshire*),

says that ' the Smelters of a valuable Mine of Copper from Pikedaw, in the Manor of Malham West, then belonging to the Lambert Family . . . ' used formerly to occupy the small cave at Jannett's Foss, below Goredale. The Lambert estates passed by marriage out of the family in 1699, so this would indicate a seventeenth-century date for the copper workings. He also mentions that the ruins of a smelt mill can still (1786) be seen. In 1751 Dr. R. Pococke, in his diary of his travels through England (*Camden Soc.*, Vol. 42), noted that ' to the north (of Goredale) towards Peictal (Pikedaw) are lead mines called Richgroves.' Pikedaw is nearly due west of Goredale, but as he travelled along the Settle road it is certain that these notes refer to the mines west and north-west of the Cove. At the time of the first Ordnance Survey in this area, 1840-1850, many ' old shafts ' were noted that belong to this period of shallow working.

At a later period much more extensive exploration was made by deeper shafts and levels, particularly between Malham and Settle. Between Attermire Scar and Benscar, north-east of Settle, there are several deep shafts along a vein, connected by adit and stope workings. Judging by the spoil heaps, and what little can still be seen of the workings and vein cheeks in one of the shafts, the venture cannot have been of very long duration or very profitable. In the scars around this site every small string of vein stuff has been picked into, but very few of the trials extend beyond a few feet, sufficient to prove the presence of a ' string ' but not enough to give a return for working. Many similar trials and shallow shafts are to be found on a small group of veins on Grizedales not far from Stockdale Farm on the Malham-Settle bridge road. On the west of the Ribble there are very few trials, and no serious working on any vein. A little work has been done at a remote period in Dangerous Cave, on Giggleswick Scar, where a thin string of barytes with traces of copper is partly the cause of the cave. On the plateau behind the Scar there are several runs of bell-pits and shallow trials, and one fairly deep shaft, but nothing in the way of spoil heaps to show that any of them were ever properly worked beyond trial. None of these groups of mines appear in the mines lists of 1840 and later, thus agreeing with the Survey label of ' old shafts,' etc. Conveyances and leases of part of this area about 1700 to 1760 reserve the mines of ' lead, copper, and coal,' but this is a customary legal form and may have no special significance for the period ; it may on the other hand be more specifically included in documents of that period, because the mines were then in operation. In a lease of 1637, of part of the Settle area, Lord Clifford reserved for himself or any he should appoint, ' free Liberty and Leave to Sink, Digg and



Search for the said Lead, Copper, Coal, and Freestone ' in the area of the unenclosed Settle Common and Moors.

The latest workings are those carried on for zinc near Malham, with a smelt mill near Malham Tarn. These were last worked at the end of the nineteenth century by a zinc syndicate, but with poor results. The ore was mined from shafts on the moor top, and by two levels driven from Sell Gill below Pikedaw, and by a few opencast works between Pikedaw and the smelt mill; Miall noted in 1878 that these had been worked intermittently for many years. The washing and dressing floors were west of Pikedaw, not far from the bridle road, and the remains of buildings, the flagged ' floors,' and the water courses and dams can still be traced—from these the dressed ore was carried to the smelt mill for treatment, but from what remains at the mill it seems fairly certain that only lead was smelted there, in an ore-hearth, with short flue-chimney, the zinc ore probably being sold either to Sheffield or Warrington, where there were zinc smelters working during the nineteenth century.

None of the veins have been worked during the twentieth century, and, in fact, practically all workings are now entirely grass grown and almost lost.

The veins can best be dealt with in a number of groups, as a catalogue of individual veins would be far too long and would serve no useful purpose. Starting at the Wharfedale end the first group of veins (group 1 on the map) occurs behind Chapel House and between Kilnsey Moor and Bordley Gate. These are small fissure veins of no appreciable throw or displacement, the filling being mainly calcite, but with cream coloured massive barytes occasionally present. The lead is in the form of galena, rarely present as a persistent string, but scattered through the barytes and calcite gangue. Such veins as can still be seen are usually only a few inches in width between the cheeks and the gangues fill the space with no clear bedding or banding to either wall. In a few of the strings traces of malachite spot the barytes, but copper ores are not present in quantity anywhere. The most persistent of this group of veins was worked at some time by a shaft on the hill top above Kilnsey Wood, and there are small spoil heaps consistent with many years working. The largest group of veins is that on Proctor High Mark (2 on map), where at least 35 to 40 short veins or strings lie in a compact parallel group, coinciding exactly, as Wager has recorded (*Quart. Journ. Geol. Soc.*, LXXXVII, 1931, p. 392) with the prevalent joint direction of the limestone, *i.e.* N.E.-S.W. The main group occurs within an area of about a mile by half a mile, the average traceable run of each vein being not more than a few hundred yards. To the S.E., towards Kilnsey

Moor, there are a few rather longer veins, which from all appearances were probably the earliest to be worked, being well defined by long rows of bell-pits, a little open cast, and no sign of deep shafts. On the Proctor High Mark veins there are many shafts and a few open cuts. The veins in both groups are mainly of calcite with fairly abundant barytes and a little lead. Far less common in the gangue are fluorspar, mainly yellow, prehnite (a calcium aluminium silicate), and quartz. As in the other groups, the barytes occasionally carries traces of copper, usually malachite. Half a mile to the north a small but similar group of veins, with the same direction, occur on Lee Gate High Mark, at the head of Wisher Gill (3). The minerals are the same except that prehnite has not been seen or recorded there. All these mines were connected with the small smelt mill at Kilnsey (pulled down about 80 years ago) and with the dressing floor at the head of Howgill Beck, half mile east of the main group of veins. The ore was carried there to the nearest fairly reliable water supply. The tailings and spoil heaps at the old floors contain many small fragments of all the minerals mentioned.

A little to the north of these groups is a small group of rather isolated veins, differing in their general direction, some of them lying due east and west (4). On low Cote Moor there are old levels and spoil heaps on an east-west lead vein, with some amount of copper pyrites on the heaps. In Dew Bottoms, between Parson's Pulpit and Cowside Beck, there are more veins which carry a little galena, and calamine (carbonate of zinc) along with copper pyrites. The workings on these veins have been nothing more than trials, the veins proving too poor for development.

The most important group of veins is that which lies west of Malham between Pikedaw and Grizedales (5). The veins are clearly cut, usually with well-marked foot and hanging wall. The gangue is different from those described, in containing much quartz, often well crystallised, and abundant iron pyrites. On Grizedales many of the veins have weathered very deeply leaving a cap or 'gozzan' of quartz, limonite, and dolomitised limestone, most of the workings being carried on in the enriched oxidation zone of carbonates. The minerals of the veins are galena, anglesite (lead sulphate), calamine (zinc carbonate), malachite and azurite (copper carbonates), with barytes (barium sulphate) quartz, calcite, and occasionally aragonite (flos-ferri) as gangues. The barytes is usually stained reddish purple and occurs in rounded masses made up of fine radiating platy crystals occasionally showing good crystal form. The calamine is always in encrusting layers, up to 2 in. thick, with mammilated surface, and pure white colour. White zinc oxide in powder form has

been recorded from these mines by W. E. Sheffield, who says 'this has not been met with in any other parts of England that I know of' (quoted by Miall in supplement to Whitaker's *Craven*, 3rd Edition, 1878).

The calamine veins were worked by fairly deep shafts, one on the side of the Settle-Malham bridle path, and several on Pikedaw and Grizedales. A long vein has been worked by one deep shaft and several open cuts, between Pikedaw and the smelt mill. Half a mile to the west of the calamine mines and between Grizedales and Kirkby Fell, the veins have very little zinc, the main content being iron pyrites with a little malachite and azurite and abundant quartz. The area forms a complex of small strings around and between which there has been considerable development of dolomitised limestone, and much impregnation by iron.

The final group of veins (6) is that around Benscar and behind Attermire and also between there and Settle on High Fell. Under Benscar there are three or four deep shafts, and on the fells round about several large open cut workings. The veins here carry lead, both galena and anglesite, with traces of cerussite (lead carbonate), malachite, azurite, iron and copper pyrites, calamine, barytes, witherite (barium carbonate), and a little fluorspar and quartz. Like all the other veins, these are really lodes of barytes and calcite with the other minerals scattered through them. There is nothing like a continuous string or pipe of ore. There is no accurate information of the working of this group beyond the fact that some of the miners from the Malham mines were sent on to Settle to make trials during the mid-nineteenth century. This may be the date of the shafts and workings, though much of the open cut and bell-pit work looks far older, and possibly belongs to the period of the lease quoted (seventeenth century).

In this brief review it should be noted that though there is some difference between the mineralisation of two sets of veins, the set which is mainly approximating to west-east or north west-south east, are the veins carrying zinc and quartz and so agree with similar veins in the Kettlewell and Buckden area that have produced small quantities of calamine and anglesite and the famous 'Kettlewell Diamonds' (bipyramidal quartz crystals); the north east-south west veins are all short and discontinuous often arranged en echelon and rarely carrying anything but galena with only the merest traces of copper. This group seems to be limited to the limestone north of the north Craven fault, and between Kilnsey and Malham, and so forms a class apart from the general run of the 'bearing' veins of Wharfedale and Settle.

Throughout Wharfedale it was the miners' experience that

the veins became impoverished and often nipped out within 200 or 300 ft. below the base of the Bearing Grit and that in general the veins were poor and indefinite in the limestones and strongest in the Bearing Grit. All that can be seen of the veins in this area support that view. Certainly the veins are indefinite and 'nipping,' and the only signs of good mineral is associated with the shallowest workings on the high ground. The deeper shafts and the levels from Sell Gill all seem to have lost the ore in depth. In no case have the extensive surface workings been continued successfully by deep sinking, and in the shafts and levels where the vein can still be seen it is clear that the whole area is very near the base of that particular zone of mineralisation which is responsible for the deposits. It suggests that between the Wharfe and Ribble, the richly mineralised zone has been removed during the Tertiary peneplanation, leaving only the deepest 'dregs' of its veins as evidence of what once was there.

TETRAPHIS PELLUCIDA HEDW. FRUIT

CHRIS. A. CHEETHAM

IN *The Naturalist* last June, Dr. T. H. B. Bedford recorded this moss in good fruit on the Moss at Malham Tarn, and I had the privilege of visiting this station with him and seeing how freely it produces fruit on the side of peat hummocks and on old stumps. I had seen fruit on a few previous occasions; first, between Osmotherley and Helmsley, where it is not uncommon in the fruiting state—the tuft I collected was so full of fruit that I failed to recognise the species in the field; later I found odd fruits in Bolton Woods and Mr. W. H. Burrell and I saw some on rocks at Plumpton. Recently, I found the plant fruiting freely on a tree stump in the wood on the scree slope in Feizor Nick. This is the furthest west I know of it fruiting in Yorkshire and in *The Flora of West Lancashire* it is said to grow luxuriantly on some of the grit-stone scars, but the fruit has not been seen there. I looked at most of the stumps at Feizor and only found a trace on two other stumps near to the fruiting patch. The rocks in this wood are limestone and *Tetraphis* is most frequent on grit-stone, especially the coarser grits. The discovery of the plant in fruit so much further west has upset the suggestion that the lower rainfall in the east might be one of the causes of the moss fruiting there and altitude cannot be involved; as the Tarn Moss is 1,250 feet O.D., Feizor Wood site 950 feet, and where I got it, near Osmotherley, 600 feet.

SCANDINAVIAN BOULDERS FOUND IN EAST YORKSHIRE

T. SHEPPARD, M.Sc., F.G.S.

SOME time ago the late Professor P. F. Kendall paid a visit to Professor Brögger in order to examine the source of the Scandinavian Boulders found in East Yorkshire. In those days I had an extensive collection showing every variety known, some of which had hitherto not been recorded, and in the *Proceedings of the Yorkshire Geological Society*, Volume XIII, Part 3, page 279, Dr. A. Harker had described the variety of Rhomb porphyries in my collection which had not been previously recognised in England.

When Professor Kendall visited Norway, he took with him the best of my specimens and also some from Mr. J. W. Stather's Collection, and they occupied a large cask. Unfortunately, in some mysterious way, the cask was stolen and we have not been able to trace the specimens since. Professor Kendall did prepare a report on some of the examples, and his manuscript, which is before me, contains information which should be placed upon record.

Professor Brögger's Identification of Scandinavian Rocks among Boulders collected by J. W. Stather and T. Sheppard in Yorkshire and Lincolnshire.

- 48. Tuft type of Rhomb-porphry, Langendal.
- Pyroxenite Vicinity of Feltvedt by Kristiania fjord.
- 53. Soda-Syenite, N. of Christiania.
- 74. Labradorite Porphyrite (with brick-shaped feldspars). Not known *in situ* in Scandinavia but only as boulders in that country.
- XX. Louth. From Hitterdal (Professor Brögger was quite positive about this).
- 28. Drammen.
- 18. Laurvikite, S. of Christiania (a widespread type).
- 28. Labradorite-porphryite from Mos (E. side of Christiania fjord, s. of Drobak, P.F.K.).
- 20. } Sparagmite Conglomerate.
- 35. } ? from N. part of L. Mjosen, Gudbrandsdal.
- 63. } This rock covers large areas of central Scandinavia.
- 43. ? N. of Drammen.
- 2, 26 } Langendal.
- & 10. }
- 1. Is *not* from Christiania region.
- 21. Possibly Drammen.
- 105. Tuft type.
- 10 & } Tonsberg type.
- 119. }
- 44. Ringerike Plateau.
- 92. Resembles rocks of Ragunda, Angermanland.

ZOOLOGICAL NOTES FROM THE SCARBOROUGH DISTRICT

W. J. CLARKE, F.Z.S.

BIRDS.—A pair of Ring Doves nested in a large tree growing in the main street of Thornton-le-Dale, opposite the Alms Houses, and very near the bus stop. Here these usually shy birds proceeded to rear three broods of young in the same nest, the last pair flying on November 8th, 1937. It is to the credit of the village boys that although the nest was plainly visible and easily accessible it was not interfered with.

A Storm Petrel was caught alive on the East Pier at Scarborough, on October 30th, 1937. A strong south-westerly wind had been blowing and the bird, although uninjured, appeared to be exhausted. Placed in a box it slept quietly all day but became lively towards evening, when it was taken down to the pier and released. It flew strongly out to sea, then turned and alighted on the roof of the fish sheds, where it was left.

A pretty variety of the Robin was seen for several weeks in November and December at Newby, near Scarborough. The bird had a brown head and back, the breast was red, otherwise it was all white.

Three female Goosanders were seen in the Scarborough Mere on December 31st, 1937, by Mr. T. N. Roberts. This water has been visited by many wild fowl—Mallard, Wigeon, Pochard, and Tufted Duck—during the present winter. Many of the Mallards remain to breed in spite of the very public character of the lake, where boating and angling are constantly going on.

Fulmars arrived in the Scarborough Castle Cliff about the middle of December. On the 26th of that month 25 were counted there, and they were very numerous on January 5th, 1938.

A Bittern was 'picked up' near Ayton on January 6th, and has been presented to the School Museum in that village.

FISHES.—Shads have been more abundant than usual during the last two years—once seldom seen, they are now quite a familiar sight on the local fish market, landed by the trawlers. Twaite Shads were noted on November 7th, one 17 in. long; two each measuring 18½ in. on December 6th; two each 18 in. long on December 21st, 1937; one of 12¼ in. and two smaller on January 25th, 1938; one on January 31st; and on the same date an Allis Shad, always a rarer occurrence than its spotted relative.

A small Sturgeon weighing 25 lbs. was landed by the s.t. *Acuba*, on January 4th, and was sold for 27/-.

A Sting Ray was landed on October 19th, 1937, by the Whitby motor boat *Golden Gate*. The tail of this specimen measured 2 feet in length, with a serrated bony spine of 4 in. in length. This spine bears a poisonous mucus and can inflict a very severe and dangerous wound.

A small example of the Comber, or Smooth Serranus (*Serranus cabrilla*), measuring $9\frac{1}{8}$ in. in length was trawled near Scarborough on January 18th, 1938. This brilliantly coloured fish is a native of the Red Sea, Mediterranean, and that portion of the North Atlantic around Madeira and Teneriffe. This is the first time it has been recorded in the North Sea further East than the Straits of Dover, or further West than the Bristol Channel. The writer is indebted to Mr. J. R. Norman for identifying the specimen, which is now in the collection at South Kensington.

CEPHALOPODS.—A small influx of Squids has made its way into local waters during December, 1937, and January, 1938. Unfortunately most of the specimens have fallen into the hands of fishermen, who promptly cut them up for bait, and their identity remains unknown. An example 5ft. 6in. long, captured alive in shallow water in the North Bay, Scarborough, on December 30th, 1937, was a female *Ommastrephes sagittatus*, the Arrow Squid, the commonest of the larger species of oceanic squids which come ashore from time to time.

A large squid with tentacles 3 feet in length was stranded at Hayburn Wyke on January 1st and was cut up for bait.

Another 2 ft. 9 in. in length washed ashore at Scalby Ness on January 12th.

A very large specimen stranded alive one mile South of Filey may have belonged to another family, *Architeuthis*. It was 7 ft. in length and was described as having a very small tail-fin in proportion to its size, which agrees with that family. Unfortunately it was immediately cut up for bait, and no part of it was preserved.

Sthenoteuthis caroli.—A very brightly-coloured specimen 4 ft. 10 in. in length overall was stranded in Scarborough South Bay, near the Aquarium, on February 7th, and was taken to the Museum.

SHORT NOTE

OUR contributor, Mr. Hans Schlesch, of Copenhagen, has been elected to receive the degree of Doctor of Science, having matriculated in Chicago, and his reprints of various articles on mollusca, known to our readers, were accepted in lieu of a thesis.

WHITBY AND DISTRICT RECORDS

H. BRITTEN

IN late September and early October 1937, my father, H. Britten, F.R.E.S., spent a short holiday in Whitby, during which we visited six localities in the district with the intention of collecting 'Homoptera,' especially the two genera, 'Typhlocyba' and 'Psylla.' Many other insects were captured, whilst the writer was able to capture a good number of 'spiders.' To give a full list of our captures would occupy valuable space, so I have restricted it to those which are additions to the County and Vice-County 62 lists, indicated by a 'dagger' and 'asterisk' respectively. The time allowed in each locality was of necessity limited to the afternoon hours; the results obtained indicate what might be accomplished by one or more energetic workers in small areas.

My thanks are due to my father for the determination of the material collected, also to Dr. W. J. Fordham, M.R.C.S., L.R.C.P., D.P.H., for so kindly informing me of the additions to the lists.

HEMIPTERA

†*Elatophilus nigricornis* Ztt. Sleights, 2/10/37. Previously only recorded from Scotland.

HOMOPTERA

†*Empoasca populi* Edw. Whitby, 1/10/37. Local on Aspen.

†*Typhlocyba betulicola* Edw. Helwath Beck, 26/9/37; Sleights, 29/9/37; 2/10/37; Whitby, 1/10/37.

†*T. salicicola* Edw. Sleights, 29/9/37.

†*T. frustator* Edw. Mulgrave Woods, 27/9/37; Sleights, 29/9/37; Whitby, 1/10/37.

**Erythroneura tiliae* Geoff. Helwath Beck, 26/9/37; Mulgrave Woods, 27/9/37; Goathland, 30/9/37.

†*E. pruni* Edw. Whitby, 1/10/37.

†*Psylla betulae* L. Whitby, 1/10/37; Sleights, 2/10/37.

COLEOPTERA

†*Atheta cinnamoptera* Th. Goathland, 30/9/37; Sleights, 2/10/37.

†*Conosomus immaculatus* St. Sleights, 2/10/37.

†*Pogonochaerus fasciculatus* D.G. Sleights, 29/9/37.

DIPTERA

**Bolitophila hybrida* Mg. Sleights, 29/9/37.

**B. cinerea* Mg. Helwath Beck, 26/9/37.

**Mycomyia tenuis* Walk. Goathland, 30/9/37.

**Allodia sericoma* Mg. Helwath Beck, 26/9/37.

**Cordyla crassicornis* Mg. Sleights, 29/9/37.

†*C. pusilla* Edw. Sleights, 29/9/37.

**Mycetophila lineola* Mg. Helwath Beck, 26/9/37; Sleights, 29/9/37, 2/10/37.

**M. signatoides* Dz. Helwath Beck, 26/9/37.

**Tipula luteipennis* Mg. Helwath Beck, 26/9/37.

†*T. (Oreomyza) obsoleta* Mg. Goathland, 30/9/37.

†*T. (O.) staegeri* Niels. Goathland, 30/9/37.

**Phaonia signata* Mg. Sleights, 29/9/37.

**Drosophila phalerata* Mg. Goathland, 30/9/37.

†*Dixa puberula* Lw. Sleights, 29/9/37.

†*D. submaculata* Edw. Sleights, 29/9/37.

**Trichina clavipes* Mg. Helwath Beck, 26/9/37.

**Tanyptera atrata* L. Goathland, 30/9/37.

**Campsicnemus scambus* Flin. Goathland, 30/9/37; Sleights, 2/10/37.

**C. loripes* Hal. Helwath Beck, 26/9/37.

**Hydrodromia fontinalis* Hal. Sleights, 2/10/37.

**Trichocera annulata* Mg. Sleights, 2/10/37.

FIELD NOTE

Puccinia graminis Pers.—The Black Rust of Wheat has been remarkably frequent in Yorkshire and also other parts of the country during 1937 on wheat and oats. I have examined a large number of fields, chiefly in the York district and others towards Pocklington and also in the Whitby area, and in every case found the disease more or less abundant. So far as I can gather the œcidial stage which occurs on Barberry and also on Mahonia appears to be absent. I should be obliged if anyone who has the opportunity will examine any Barberry and *Mahonia aquifolium* during the summer for the œcidia or cluster cup stage. This occurs from May onwards. The cluster cups are generally in small groups, each cup appearing like a small cheese-cake with the orange centre surrounded by the torn white epidermis of the leaf and are generally on the under-surface of the leaf but may also occur on the fruit. Although the teleutospore stage has been so abundant on the hosts mentioned, I have only obtained it very sparingly on *Dactylis glomerata*, *Arrhenatherum elatior*, and *Agrostis* species this year. Any records on other hosts will be of value and I shall be pleased to have records of any other Uredines and Ustilagines.—W. G. BRAMLEY, Spring Cottage, Pallathorpe, Bolton Percy.

In Memoriam

CHARLES WATERFALL

1851—1938

It is with much regret that we record the passing on January 26th of the veteran Yorkshire botanist, Mr. Charles Waterfall, who lived in Hull up to 27 years ago, removing to Chester in 1911. For more than 60 years he devoted his leisure to the study and collection of British plants, and his name occurs often in J. F. Robinson's *Flora of the East Riding*. He kept up his interest in the district, and quite recently he was in communication with his old society in Hull concerning certain plants introduced into the area of the Hull docks by commerce.

In 1911 Mr. Waterfall was elected a Fellow of the Linnean Society, and in 1935 was accorded a signal honour by the Chester Society of Natural Science, Literature, and Art in being awarded the Kingsley Medal for his distinguished services in the study of botany.

REVIEWS AND BOOK NOTICES

A Nature Lover in British Columbia, by H. J. Parham, pp. 292 with 21 illustrations. Witherby, 8/6. This is a readable and entertaining account of the author's long study of the wild life of the Okanagan Valley in British Columbia. The Western side of North America is not so far away nowadays, and many Englishmen have spent holidays in British Columbia. They, and also those who are not so fortunate, will enjoy this book. It is good to know something of the natural history of other countries besides our own, and although the work under review does not pretend to be at all technical it is written in an authoritative manner and is full of interest.

The Observer's Book of British Butterflies, pp. 191 with 154 illustrations in colour and black and white, compiled by W. J. Stokoe. Warne, 2/6. This is a capital little pocket book in Warne's well-known series of Observer's books. In spite of its small size it deals most adequately with British Lepidoptera. All species are described, and there are useful chapters on the Life Cycle of a Butterfly, and Hints on Collecting. The illustrations are brilliantly clear and most accurate. This is a book we can strongly recommend to the beginner and to naturalists generally.

The Scenery of England and Wales, by Prof. A. E. Trueman, pp. 351, with 112 original illustrations. Gollancz, 7/6. We have nothing but praise for this excellent account of the origin of the scenery of England and Wales. Prof. Trueman naturally writes mainly from a geologist's point of view, and this is as it ought to be. The book is most readable, and we dare to say that it will be found a more useful treatise to the average educated reader than the classical work of Lord Avebury. The diagrams and sketches are clear and informative, and while highly technical language is avoided, one can learn a good deal about the geology of the country without having recourse to standard text-books. The subject-matter is grouped according to natural areas, such as the Chalklands, Mountain Limestone, the Pennine Moors, Lake District, etc., and the associated subjects of domestic architecture, rivers, forests, and so on, are adequately covered. This will be a most welcome handbook for teachers of geography, those who are interested in the preservation of the countryside, and for the intelligent Rambler, cyclist and motorist.

CORRECTION

The Wonders of the Great Barrier Reef, by T. C. Roughley

We regret that in our review of this book (ante p. 99) the price given is 8/6. This was a slip and the actual published price of the book is 15/-.

NEWS FROM THE MAGAZINES

The Entomologist for February contains 'The Lure of the Lamp,' by R. James; 'Additions to the Butterflies of Tobago,' by W. G. Sheldon; 'Alternating Generations of the Cynipidae,' by H. J. Burkill; 'A New Melitoid Butterfly from Asia,' by L. G. Higgins; '*Catocala fraxini* L.: a New British Record of Capture and Breeding,' by E. A. Cockayne, C. N. Hawkins, F. H. Lees, Sir B. Whitehouse, and Dr. H. B. Williams; '*Argynnis pales* Schff. and Allied Species,' by Brig.-Gen. B. H. Cooke, and several Notes and Observations.

The Entomologists' Monthly Magazine for February contains 'A Preliminary List of the Coleoptera of Windsor Forest,' by H. Donisthorpe; 'Two New Omalid Genera from Australia (Col. Staphylinidae),' by W. O. Steel; 'Some Ants of the Subgenus *Planimyrma* Viehmeyer of the Genus *Aphaenogaster* Mayr,' by H. Donisthorpe; 'The Occurrence

of a Species of Capsid (Hemiptera-Heteroptera) New to Britain,' by D. C. Thomas (*Campylomma verbasci* Mey.-D. a considerable number on Hollyhock at Faling); 'Notes on the Nomenclature of British Corixidae,' by W. E. China; 'A Note on the Control of Malaria Mosquitoes by Carp in Morocco and the Effect of Mosquito Control Measures on the occurrence of the Moroccan Locust,' by K. H. Chapman, and 'The Hippoboscidae (Diptera) recorded from the Pacific Islands,' by G. B. Thompson.

The Entomologist's Record for February contains 'Notes on the Life History of *Leucania L-album* L.,' by E. A. Cockayne; 'A Visit to Portugal,' by E. Scott; 'Notes on Collecting, etc.,' 'Current Notes'; and supplements: 'The British Noctuae and their Varieties,' by H. J. Turner; 'Nomenclature: the International Code of Zoological Nomenclature *versus* the Private Codes,' by B. C. S. Warren; and 'The International Code of Zoological Nomenclature. A Reply to Mr. Warren,' by Rev. G. Wheeler.

The Entomologist for March contains 'The Life Story of *Apatura iris*,' by S. Morris; '*Catocala fraxini* L. a New British Record of Capture and Breeding,' by E. A. Cockayne, C. N. Hawkins, F. H. Lees, Sir B. Whitehouse, and Dr. H. B. Williams; 'Migration Records, 1937,' by Capt. T. Dannreuther; (*Herse convolvuli* Sulby, Isle of Man, October 19th; *Macroglossa stellatarum*, Douglas, Isle of Man, September 19th; *Plusia gamma*, Wetwang, East Yorkshire, May 28th; *Nymphalisio*, Durham and Northumberland in June) and several Notes and Observations.

The Entomologist's Monthly Magazine for March contains 'The Hippoboscidae (Diptera) Recorded from the Pacific Islands,' by G. B. Thompson; 'Some Ants of the Sub-genus *Planimyrma* Viehmeyer of the Genus *Aphaenogaster* Mayr. Supplementary Note,' by Editor (Figure); 'The British Species of *Acrilus* Lec. (Col. Histeridae),' by K. G. Blair (*A. punctum* a maritime species occurring on sand and under seaweed just above high-water mark, South and South-West England; *A. atomarius* Wors. in burrows of *Dorcus*; *A. nigricornis*, common and widely distributed in haystack refuse, rotten vegetation, hot-beds, etc., Yorkshire, Lancashire, Lincolnshire, Nottinghamshire; *A. homaeopathicus*, Dorset on burnt ground); 'On the Xantholinid Genera *Thyreocephalus* Guer. and *Eulissus* Mannh. (Col. Staphylinidae),' by W. O. Steel (Figures); 'On *Phalacrus nigrinus* (Marsham, 1802),' by J. Balfour-Browne; 'A New *Chirothrips* (Thysanoptera) from Cyprus,' by J. D. Hood (Figures); 'The British Species of *Lonchoptera* (Diptera),' by J. E. Collin (Figures *L. scutellata*, Suffolk, Hereford; *L. tristis*, South England; *L. lutea*, common and widely distributed; *L. nitidifrons*, Oxford, Suffolk; *L. meijerei*, Herefordshire, Inverness; *L. furcata*, Nottinghamshire, Lancashire, Aviemore; and *L. nigrociliata*, Devonshire, Herefordshire, Dumfriesshire); 'A Preliminary List of the Coleoptera of Windsor Forest,' by H. Donisthorpe; and Short Notes.

The Entomologist's Record for March contains 'Names of Microlepidoptera,' by T. B. Fletcher; 'Retarded Emergence in Trypetidae,' by H. W. Andrews; 'Beelzebub,' by M. Burr; 'Pyralidae and microlepidoptera collected in Cyprus during 1920 and 1921,' by K. J. Hayward; 'Notes on Collecting, etc., and supplements 'The British Noctuae and their varieties,' by H. J. Turner; 'Nomenclature,' by B. C. S. Warren; 'The International Code of Zoological Nomenclature,' by G. Wheeler; and 'More About Names,' by T. B. Fletcher.

My Garden for April, price 1/-, contains 150 pages and is packed with really good articles, the most important of which are 'The Raising of New Daffodils,' by H. Salisbury; 'A Rebel in the Rose Garden,' by S. G. Bradford; 'The Passing Show,' by Capt. W. E. Johns, and 'Shrubs for Spring Planting,' by A. T. Johnson. The illustrations are all very good and there are fine-coloured plates of *Camellia japonica* and *Malus sylvestris*.

A New Work by the Author of *YORKSHIRE* in the
Borzoi County Histories.

ROMAN YORKSHIRE

208 + 12 Pages, Demy 8vo, with 8 Full Page Plates, and 8 Diagrams and Maps
in the text, bound in Art Cloth Boards, 7/6 net or post free 8/-.

BY

F. R. PEARSON, B.A.

SENIOR HISTORY MASTER AT BRIDLINGTON SCHOOL

WITH FOREWORD BY

THE RT. HON. THE VISCOUNT HALIFAX

The Contents include :—

The Invasion of Britain and the Advance of the Frontier (A.D. 43-71)

The Invasion of Yorkshire and the Foundation of Eboracum (A.D. 71-77)

The Subjection of Yorkshire and the Problem of the Pennines (A.D. 77-85)

Some Branches of Ermine Street in Yorkshire

Some Roman Roads and Stations in North and East Yorkshire

Some Roman Roads and Stations in West Yorkshire

Roman York

Trade and Industry in Roman Yorkshire

The Coast Defences of Roman Yorkshire

Obtainable through all booksellers

*An eight-page illustrated pamphlet will be gladly sent by the publishers,
free of charge*

A. BROWN & SONS, LIMITED

5 FARRINGDON AVENUE, LONDON, E.C.4

COLLECTING APPARATUS.

Nets	Vascula	Aquaria
Entomological Apparatus	Plant-Presses, etc.	Geologist's Apparatus
Larva-Cages	Pond-Nets	Dissecting Instruments
Vivaria	Collecting Tubes	Microscopes, etc.

All requisites for indoor or outdoor work in every branch of Natural History.

FLATTERS & GARNETT, LTD.,

309 OXFORD ROAD, MANCHESTER.

Irish Naturalists' Journal

A Magazine of Natural History, Antiquities and Ethnology.

Published every Quarter by the I.N.J. Committee.

EDITED BY J. A. S. STENDALL, M.R.I.A., M.B.O.U.,
with the assistance of Sectional Editors.

Annual Subscription, 6/- post free. Single Parts, 1/6.

All communications to be addressed to—

W. M. Crawford, B.A., F.R.E.S., F.Z.S., Hon. Sec.,
Orissa, Marlborough Park, Belfast.

WATKINS & DONCASTER

NATURALISTS,

36, STRAND, LONDON, W.C.2

(Five doors from Charing Cross),

P.O. Box 126.

Telephone: Temple Bar 9451.

Keep in stock every description of

APPARATUS, CABINETS, BOOKS & SPECIMENS

for Collectors of

BIRDS' EGGS, BUTTERFLIES, MOTHS, Etc.

Catalogue (96 pages) sent post free on application.

NORTH WESTERN NATURALIST

A SCIENTIFIC AND EDUCATIONAL JOURNAL (Published Quarterly),
especially for Cheshire, Cumberland, Derbyshire, Isle of Man,
Lancashire, North Wales, Shropshire, Staffordshire and Westmorland.

EDITED BY A. A. DALLMAN, A.L.S., F.C.S., in collaboration with

H. BRITTEN, F.R.E.S.
F. J. BROWN, M.Sc.
Rev. G. H. CARPENTER, D.Sc.
W. E. COLLINGE, D.Sc., F.S.A.
R. H. CORSTORPHINE, B.Sc., F.L.S.
R. J. FLINTOFF, F.L.S., F.Z.S., F.C.S.
H. E. FORREST, F.L.S.

J. W. JACKSON, D.Sc., F.G.S.
T. A. JONES.
H. W. MILES, M.Sc., Ph.D.
C. L. WALTON, M.Sc., Ph.D.
F. E. WEISS, D.Sc., F.R.S., LL.D.
A. WILSON, F.L.S., F.R.Met.S.

Communications to:—

Editorial—A. A. Dallman, A.L.S., F.C.S., 12 Tickhill Road, Doncaster.

Business—T. Buncle & Co., Ltd., Market Place, Arbroath.

Annual Subscription, 7/6. Single copies, 2/- net.

Printed by A. BROWN & SONS, LTD., Perth Street West, Hull, and published by
A. BROWN & SONS, LTD., at 5 Farringdon Avenue, in the City of London.
April, 1938.

The NATURALIST

A MONTHLY
ILLUSTRATED JOURNAL

PRINCIPALLY FOR THE NORTH OF ENGLAND

Edited by

H. PEARSALL, D.Sc., F.L.S., and W. R. GRIST, B.Sc.,
The University, Leeds.

with the assistance as referees in special departments of

H. B. Booth, F.Z.S., M.B.O.U.

J. M. Brown, B.Sc., F.R.E.S.

W. H. Burrell, F.L.S.

Chris. A. Cheetham, F.R.E.S.

W. J. Fordham, M.R.C.S., L.R.C.P.,
D.P.H.

Riley Fortune, F.Z.S., F.R.P.S.

Professor A. Gilligan, D.Sc., F.G.S., M.I.M.E.

Mrs. Elsie M. Morehouse.

Thos. Sheppard, M.Sc., F.G.S., F.Z.S.

T. W. Woodhead, Ph.D., M.Sc., F.L.S.

Contents

PAGE

Water Pipit in Yorkshire—R. M. Garnett . . . 133-135

Zinc in Water—Professor A. E. Boycott . . . 135-136

Bird Notes from Upper Nidderdale—H. R. Jukes . . . 137-143

Records 136, 143-144

Attributes of Whales—R. W. Gray . . . 145-153

Yorkshire Naturalists' Union: Vertebrate
Zoology Section—E. Wilfred Taylor . . . 154-155

Reviews and Book Notices 155-156

News from the Magazines 156

The Vegetation of Yorkshire and Supplement
to the Floras of the County—(the late) Dr.
F. A. Lees—Edited by C. A. Cheetham . . . 157-164

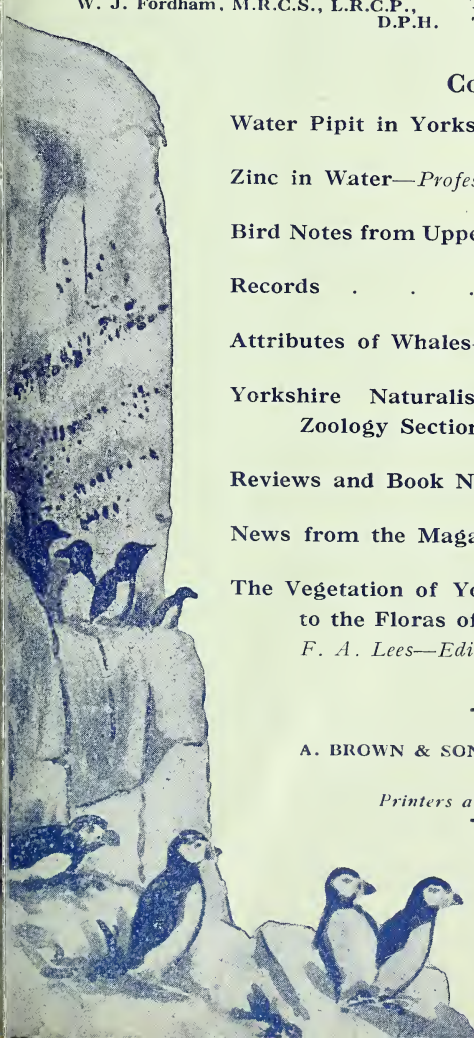
LONDON:

A. BROWN & SONS, Ltd., 5 Farringdon Avenue, E.C.4.
And at Hull.

Printers and Publishers to the Y.N.U.

PRICE 1/6 net.

Prepaid Subscription
15/- per annum.



A new work of prime importance to all interested in
Ornithology

A SPARROW-HAWK'S EYRIE

BY
W. W. NICHOLAS, F.R.P.S.

WITH FOREWORD BY
BRIAN VESEY-FITZGERALD, F.L.S., F.G.S.
NATURALIST EDITOR OF *THE FIELD*

xviii + 75 pages and 17 plates. Crown 4to.

cloth **7'6** net

This book, which is profusely illustrated from photographs taken by the author and his friend, forms the study of a Sparrow-hawk's eyrie from the hatching of the eggs to the flying of the young. In his foreword Mr. Vesey-Fitzgerald says :—" Mr. Nicholas has made a most careful study of the bird and he has in this book added very considerably to the sum total of our knowledge. And more knowledge of such birds as this very beautiful hawk is urgently needed."

OBTAINABLE FROM ALL BOOKSELLERS

*A four-page illustrated pamphlet will be gladly sent by the publishers,
free of charge.*

A. BROWN & SONS, LIMITED
5 FARRINGTON AVENUE, LONDON, E.C.4.
AND AT HULL

WATER PIPIT IN YORKSHIRE

R. M. GARNETT

THE occurrence of a water pipit (*Anthus s. spinoletta*) near Pickering would seem to be of more than passing interest, for it is, I believe, the first record for the County, and the fact that the bird was not shot, though this could easily have been done, led me to ask several other observers to come over and add their observations to my own. As a result, the following notes on it are compiled, and the observers are agreed on the identification.

The points noted, some of which were seen by all, and all by more than one of the five observers, are as follows, and certain individual comments are initialled by the observers concerned.

BILL.—Slightly longer than that of meadow pipit.

Yellow at base of lower mandible, otherwise brown. (All lower mandible horn yellow—upper mandible, dark brown. W.S.M.).

LEGS.—Grey-brown in colour, not noticeably long, definitely dark.

PLUMAGE.—General colour of head and mantle (brown, V.M.) (dark? brown, W.S.M.) (nearer to tree pipit than to rock pipit).

Mantle streaked faintly with darker brown.

Sides of back (showing now and then beneath closed wings) warm brown.

Throat streaked only at sides (moustachial stripe).

Upper breast streaked brown right across and ending abruptly at lower edge.

Rest of breast and underparts, shining white (I agree 'shining white' is certainly an overstatement. R.M.G.). (Streaks thinner and darker than meadow pipit—not absolutely pure but definitely white. W.S.M.). (Dirty white. V.M., D.S.).

A few streaks only in one line below the edge of closed primaries.

Buff eyestripe over and behind eye very noticeable.

Double buff wing bars (edges of coverts).

Under-tail coverts white.

Tail white edged (outer feather, W.S.M.). (Tips [of outer tail feathers, W.S.M.] showing white when tail closed).

Rather longer than meadow pipit's and more mobile when the bird was feeding. (Centre tail feather darker brown than mantle. V.M.).

FLIGHT.—Jerky, but rather more determined (or direct) than that of meadow pipit. White underparts and outer tail very noticeable.

CALL.—Invariably a shrill single note, sometimes repeated at intervals of 2-3 seconds during flight. (Usually at intervals of 2 or 3 seconds. Once heard uttering a double note. D.S.). Very like the call of the rock pipit ('Phwee,' clearer and longer. V.M.) and carried a long distance, so that the bird could be followed by its call even when not seen.

HABITAT.—Almost entirely on soaked beds of watercress or rough wet herbage of a disused bed and often actually wading. (Quick movements but did not run. V.M., D.S.)

Usually in company of meadow pipit with which it could readily be compared.

The bird was very shy and took wing much more readily than the meadow pipits.

Summary of points of comparison with meadow-pipit : longer ; larger ; more slender ; less streaked on mantle and breast ; ear coverts more distinct ; contrast between dark of wings and light of underparts much greater ; legs darker and duller ; note quite different.

The observations were made by the following and weather conditions are added :

Observers	Feb. 11th	Feb. 12th	Feb. 13th	Feb. 15th	Feb. 16th
R. M. Garnett .	×	×	×	×	×
W. Ward . . .	—	×	—	—	×
W. S. Medlicott	—	—	×	—	×
Miss D. Steinthal	—	—	—	—	×
Miss V. Maynard	—	—	—	—	×
CONDITIONS . .	Bright intervals Fresh N.W.	Gale N.W.	Squalls of hail and snow Bright intervals.	V. cold Dull N.E. Strong.	Bright sun Less wind N.E. Cold.

Two skins of this species and one of Tawny Pipit (*A. campestris*) from the 'Dresser' Collection, kindly loaned by Manchester Museum, have been examined by all the observers, who are agreed that it most closely resembled a juvenile male (*A. s. spinoletta*) taken in January.

They are also agreed that it closely resembled a coloured plate of water pipit by Grönvold in Kirkman's *British Bird Book* (Vol. I, Plate 30, the bottom left-hand figure. In my copy of this work the protecting sheet has the names printed on it, but the words 'right' and 'left' are transposed in error).

P.S. Nothing further was seen of this bird, but by February 27th another had arrived. This bird was darker on the upper parts and more grey on the head, and thus more like a rock pipit (*Anthus spinoletta*) though with white outer tail feathers.

From then until April 1st there were one or more examples present at each visit that I paid to the place, and on March 7th Capt. Medlicott again came over and together we examined two in detail. One of these he thought did not shew the white outer tail so plainly as it flew up, but the other was typical. During the later half of March the birds gradually became much greyer on the head, and lost the streaks on the breast, becoming in appearance somewhat suggestive of a female wheatear.

Visits paid	Feb. 27th	Mar. 1st	Mar. 3rd	Mar. 5th	Mar. 7th	Mar. 10th	Mar. 12th	Mar. 16th	Mar. 19th	Mar. 22nd	Mar. 25th	Mar. 29th	Apr. 1st
No. present	1	1	1	1	1 1?	3	3	3	2	2	2	1	1

ZINC IN WATER

A Note for Aquarists

PROFESSOR A. E. BOYCOTT

WHEN I moved to a new house a couple of years ago I brought with me an experiment on inheritance in the water snail *Limnæa peregra*, which had been going on successfully in the domestic tap water in London and the neighbourhood for some years. But it was soon clear here that something was wrong: there was an exceptional mortality among the young snails during the winter and when the summer breeding season came on the snails grew badly, bred late, laid few eggs, and were generally in a poor way, though not many actually died. The *Elodea* with which the jars were weeded (without any earth) also shewed signs of poisoning, and instead of growing and keeping healthy and green for twelve months or more as it will in London, it wilted away and was generally dead in two or three months. The explanation ought to have occurred to me sooner than it did, for I had read a long account of the matter in Thresh's book on water supplies and forgotten all about it, but it ultimately dawned on me that the trouble was due to zinc in the water which came from a well in the oolite and, after a short storage in galvanised iron tanks, reached these premises through about one and a half miles of galvanised iron piping. On testing, the presence of zinc was very obvious and rough quantitative tests against standard zinc sulphate shewed about five parts per million. Aquaria made up with the same race of snails and *Elodea* and with equally hard (100 mgm. calcium per litre) water from a near-by house well, without any galvanised iron, did very well. I am doubtful whether the zinc is directly poisonous to the snails in such low concentrations: I fancy its harmful effect is due to its poisoning the plants and particularly the algæ which form the main natural food of *Limnæa*. But whatever the detailed explanation, this zinc-contaminated water is dreadful stuff for aquaria

and it is, I understand, quite common in small country water supplies in many parts of Britain. Domestically, it may attract attention by becoming cloudy on heating, before it actually boils.

Zinc may be conveniently tested for by adding a drop of 10 per cent. sulphuric acid to half a test tube of water and then floating 5 per cent. potassium ferrocyanide on the top: an opalescent ring is given by less than one part per million and with five parts there is quite a thick precipitate. Or one may follow Dr. W. R. G. Atkins¹ and use a 0.1 per cent. watery solution of sodium diethyl-dithiocarbamate which gives an opalescence, soluble in ammonia, with as little as 0.1 part. It is easier to find than to get rid of. It is presumably present as bicarbonate for boiling precipitates it completely, but that also brings down most of the calcium which, at any rate for my own purposes, it is desirable to keep. If the water is simply exposed to the air in a shallow dish most, but not all, of the zinc separates as a precipitate or a scum in a few days. If it is made up with *Elodea* into an aquarium either in a glass jar or a wooden tub the water is free from zinc in a few days and may be siphoned out to start another aquarium, but an attempt to do this on a large scale in a cattle trough was a failure. I am told that the base-exchange methods for softening water do not remove zinc, and as the experts hold that it has, in such amounts as occur in water, no harmful effect on man there is no chance of galvanised iron tanks and pipes being abolished by the sanitary authority. The only practical thing to do seems to be to find another supply of water.

RECORD

DISPERSAL OF SPECIES BY COMMERCE

A LIVING example of the prettily-marked centipede, *Scolopendra subspinipes subspinipes* was found at Scarborough on January 7th, 1938. It had travelled as a stowaway in Jamaica bananas. It is a common species in all tropical and sub-tropical countries, excepting the Mediterranean region and is especially numerous in the Indo-Australian region. A handsome creature, its colour is umber brown, the head and first segment behind it being bright mahogany brown. Each leg is coloured bright red on the basal portion and a vivid green at the tip. The specimen was kindly identified for me by Mr. R. J. Whittick, of the British Museum.—W. J. CLARKE.

¹ *Analyst*, 1935, vol. IX, p. 400. *J. Mar. Biol. Assoc.*, 1936, vol. XX, p. 625.

BIRD NOTES FROM UPPER NIDDERDALE

H. R. JUKES

Scar Village

THE most disappointing feature of bird watching among the wilder Pennine moorlands, as typified by the district under notice, viz. Scar and Angram at the head of Nidderdale, is that most of the interesting species are very much of the 'here to-day and gone to-morrow' variety. It is sheer luck if one comes across them; and this rather inclines me to the belief that a big percentage of our passage migrants up here are never seen at all, and that numbers, in most cases, are considerably greater than we imagine. The whole area between Scar and Kettlewell, in Wharfedale, is uninhabited, in fact seldom visited even by shepherds and, as I say, it is a question of luck if any uncommon bird happens to be seen at all. The country is inhospitable and, with few exceptions, I have not known a bird of passage or winter visitor stay long.

Ravens are seen occasionally. I have seen four crossing over from Coverdale towards the southern shoulder of Whernside and on two or three occasions have noticed a pair of birds indulging in their usual aerobatics at a considerable height. No pairs breed actually in Upper Nidderdale.

Carrion Crows are occasional visitors and one year attempted to nest in a clump of trees adjoining the reservoir. The district, however, is well kept and both nest and old birds were destroyed.

I myself have not noticed any visit from the Hooded Crow, though there is a stuffed specimen in the Crown Hotel, at Middlesmoor, which was shot on October 21st, 1933.

Jackdaws and Magpies I have never seen in the district.

Keeping to the moorland birds, I have actually seen a Hen Harrier on two occasions, both in late Autumn, and both males. One was shot a year or two back and is now stuffed and on view in the Crown Hotel in Middlesmoor, where incidentally they have also a Rough-legged Buzzard which came to grief up here too.

We get one or two of the latter species every Winter. They frequent the 'rabbitty' places up above Angram. Last Winter we had two at the same time. They stay a few days, but then disappear; though I am inclined to think that this departure (I hope it is departure and not demise) is due more to intentional interference than to any desire on their part, for rabbits are plentiful enough and the weather open enough, until long after they have gone. In fact, I have known others—or the same birds come back—much later in the season. I think that Rough-legged Buzzards

are more in the nature of Winter visitors than passage migrants just stopping here en route.

They are magnificent birds ; I have watched them for hours. The most striking feature is the big white patch above the tail coverts. They seem to be a much more vigorous and stronger species than our Common Buzzard—at least from my own rather limited experience of the latter when I lived up in the Lake District. They can hover, rather like a Kestrel, but they drop on to their quarry with much more dash than that bird—the glide, if you see what I mean, appears much more purposeful and unhesitant ; though nothing comparable to that of a Peregrine. I have been very near to them and actually seen one bind on to a rabbit, which it killed by a couple of pecks of the head. I have also seen them miss, and one which struck the bunny too far back, I should imagine, because there was a regular mix-up for a second or two—like a rugger tackle—and the rabbit broke loose and reached cover. They are magnificently flying birds, with a wild cat-like call. All the same I do not think that they indulge in mere idle flying—or soaring—half so much as does the Common Buzzard. Only once have I seen two in residence at the same time ; they generally come singly. But these two were quite friendly and often could be seen together or not far apart. My first view of them, strangely enough, was from my bedroom window ; they were between my bungalow and the dam wall, less than a hundred yards away, a strange sidelight, surely, upon the remoteness of this village now ; I don't think many folk in this country have seen a pair of Rough-legged Buzzards within thirty or forty yards of their window very often.

Twice I have seen Peregrine Falcons close to—I think they are the finest birds which fly—and on half a dozen occasions, possibly more, as they crossed high overhead. The crescent shape of the wings while flying is most noticeable, as it is in the Merlin, too. On one occasion one passed within a dozen feet over my head as I was sheltering behind a wall. One of the best hours I spent up here was watching one of these grand birds perched on a rock nearly on the top of Whernside. I had my glasses and I honestly believe he knew I was there all the time, for he did everything to oblige me in the way of showing himself off ! Two, unfortunately, have been shot this past Autumn.

We get a pair of Merlins to about every 2,000 acres of moor. They are invariably shot and seldom get to the egg-laying stage, though I have seen two or three nests every year. In one case an adder had killed the four chicks, which were still warm, and was actually coiled up in the nest when I arrived. We get a lot of adders, by the way.

Kestrels are common, especially in Autumn. One bird was picked up dead with a ring on its foot. On inquiry from Witherby's this was found to have been ringed earlier that year near Preston, Lancashire. They frequently attempt to breed in the barns, but such efforts are always destroyed by the keepers.

Tawny Owls are as common as they are allowed to be. I have seen one Barn Owl, which flew into one of the hostels and was caught. It was kept a day and then liberated. That is the only specimen I have come across up here, though the Short-eared Owl is on occasion quite plentiful. I think this species' visits are dependent upon food questions, as there are seasons when only one or two are seen. I have never seen a Long-eared Owl in the district, nor heard of one. The Little Owl, too, does not seem to have spread up here yet.

We get Black Game on the moor as well as the ordinary Red Grouse. A few pairs breed on the benty ground below Great Whernside. I once saw an early morning 'Braemar Gathering' of cocks close to the dam at Angram. The noise was unbelievable. There would be a full dozen there, with three or four attendant grey hens on the outskirts. Partridge are more numerous than one would expect in such an exposed position and at such an elevation. Several pairs breed and hatch off their young, though these never thrive and seldom more than one or two chicks ever reach even the cheeper stage. One year a pair bred at the foot of a clothes-props immediately outside one of the bungalows. It was planted in rushy ground and the nest was in the middle of a tuft. The tenant looked after it and the eggs eventually hatched.

We get many flights of Wild Swans overhead and several times a year a number rest on the reservoirs for a few days at a time. Wild Geese are also frequent visitors, but are very wary and I have never got near enough to distinguish the actual species. Flocks up to fifty and sixty strong can often be seen.

We get Mallard, Teal, Wigeon, Pochard and Tufted Duck on the reservoir. The first two breed on the moors in some numbers. The young here cannot stand the severe conditions and soon die, very few indeed reaching the earliest flapper stage. The sides of each reservoir are practically devoid of any cover and probably exposure is the main cause of the trouble as we frequently get severe weather conditions until some time after the normal hatching period. Goosanders are common autumn visitors. These birds exhibit a degree of tameness or indifference to human approach that I have not seen in any other species of bird. A favourite perching place is on the valve tower of the dam, the roof of which

is about 15 feet above road level. I have seldom been able to make a bird take to flight from here by flicking stones or other gesticulation. On one occasion I lobbed a heavier stone up which, hitting the bird on the chest, toppled it over into the well-like roof of the tower. It scrambled back unconcernedly to its previous position. I thought it might possibly be a wounded bird, but a little while afterwards it took wing and flew rapidly off down the dale. This tameness is noticeable with all the members of this species I have seen here.

Hérons are common, more especially during the trout-spawning season when I have seen as many as a dozen within a couple of hundred yards. Normally they come up the dale towards evening and stay all night, returning soon after dawn. They are exceptionally keen-sighted and wary. Scarecrows, erected to keep them away, were efficacious for a week or so, but were then ignored until the position of them was moved, when they again worked for a few days.

Several pairs of Woodcock breed in the neighbourhood, and very definite winter trips take place. Large numbers of birds arrive, thronging all suitable cover, and then depart just as suddenly. I have noticed the frequency with which this species hits the telephone wires and other cables. In the old days, when the wires were more spread out over the works, at least a dozen Woodcock would be found each winter which had been killed or wounded by them. I wondered if this had anything to do with the rather backward position of the Woodcock's eye.

Snipe are numerous, both as visitors and resident breeders. Jack Snipe come occasionally. Dunlins breed on the moors and can always be seen round the reservoir side in summer.

Redshank also are very common, arriving here about April 1st and departing about August. I have seen two Greenshank, on the morning of September 2nd last. These are the only ones I have seen. The two birds were disturbed from somewhere and flew over the wall under which I happened to be hidden. They called as they flew, a rich, deep, almost bell-like call, very much less frequently uttered and more musical than that of the Redshank. They looked considerably bigger birds, too, and very dark-plumaged, with a conspicuous white rump. They saw me, but pitched on the water's edge not more than 50 or 60 yards ahead. On my walking up they quickly took flight and pitched again, 20 yards farther on. They then slipped round a corner and I had not time to follow up further. On my next visit—a more extended one—during the afternoon they had gone and I am certain were no longer on the reservoir side. The most noticeable thing to me was the very dark, it appeared almost

black, plumage, except for the, as I say, very conspicuous white rump and the musical call.

Common Sandpipers frequent every available bit of water. I should estimate a pair to every 200 yards at the outside.

A Sanderling was shown to me which had been shot on the dam side in September, 1934. I have also seen on four or five occasions Knots in intermediate plumage. One was shot on the reservoir side in August, 1930. I am convinced that this bird visits inland waters during autumn and early winter to a far greater extent than is commonly supposed, for I have frequently suspected their presence but have been unable to get near enough to make identification certain.

Curlews, Lapwings and Golden Plover are naturally very numerous. Of both Curlew and Golden Plover large numbers of apparently unpaired birds frequent the pastures adjoining the reservoir throughout the summer. I have seen the Ringed Plover once. It was very tame and allowed me to get, and keep, within two or three yards of it. The keeper at Gouthwaite, a little farther down the valley, tells me that he has seen a nest on a belt of shingle there.

Oyster-catchers occasionally visit us, and strangely enough on each occasion I have seen them there have always been three birds together.

Black-headed Gulls and Lesser Black-backs are common visitors. The former breed wherever allowed, and I suspect the larger species does to, though I have not seen a nest yet. Common Terns come occasionally.

The Great Crested Grebe is a very frequent visitor but generally only stays a day or so. Probably these birds have come up the river from Gouthwaite reservoir, where they are far more frequently seen. The same remark applies to the Dabchick. Neither species has bred with us here.

I have seen two Water Rails; both storm-driven birds which had been stunned by hitting one or other of the buildings. Both were picked up and liberated later, when they seemed quite unharmed and moved off towards cover.

The Landrail seems to have disappeared. Ten years ago there were three pairs between here and Lofthouse, four miles down-stream. Since then I have neither seen nor heard tell of one nearer than Ramsgill, farther down still.

Stock Doves have increased tremendously. Ten years ago half a dozen pairs at most nested in some cliffs near here. To-day every barn has a pair and the colony on the cliffs has increased correspondingly and extended to other suitable quarters. They breed all through the summer. I have found eggs in April and in every month up to and including September.

Of the smaller birds, the Meadow Pipit is naturally the most abundant, closely followed by the Wheatear. Twice I have seen the Greenland Wheatear on passage. These migrants are bigger, more gaudy birds altogether than the common variety. I watched one for an hour one morning through a window; he was feeding on a barish patch of mossy turf not six feet away. He stayed about all that day but had gone next morning and I did not see him again. There was no possible doubt about the actual species.

There are Twites on the moor, but not many.

The only Bunting we get is the Snow Bunting in winter. We always get a flock or two of these. Though there are a few reedy pastures I have never come across the Reed Bunting here, notwithstanding its frequency at Gouthwaite. The Yellowhammer also, I have never seen. The local farmers refer to the Yellow Wagtail as a Yellowhammer, by the way.

Of the Wagtails the Yellow is the commonest by far, followed by the Pied. The Grey is rather uncommon, though I have come across quite a few nests; nothing in comparison however with that of the Yellow, which is more closely distributed here than in any place I have ever been. The White Wagtail is a fairly frequent passage bird in Spring and Autumn. They are quite easy to distinguish from the ordinary piers; they are a much lighter, greyer bird, especially on the back. The parties vary in size, sometimes there is only a couple, at other times eight or nine. The parapets of the dam wall are favourite places, as these are always clouded with innumerable midges and small flies. The White Wagtails only stay a day or two, but other lots come to replace them and the migration goes on in a quiet, unobtrusive way for six or eight weeks. I am sure that numbers of White Wagtails get through totally unsuspected or overlooked, for they often mix with the Piers, though the most cursory glance is enough to distinguish them when seen together.

We are just above the line for breeding Tree Pipits. They breed at a couple of hundred feet lower elevation than the village, and are there quite common. The eggs show all the usual variations even when nests are found close together.

Ring Ouzels and Blackbirds both breed here; we are just about on the line of demarcation. I have exchanged eggs of these species and young have been reared successfully by each. Both are very common.

The Willow Warbler is the only representative of its class. Particularly numerous.

We get a few Redstarts, but not many, and the same remark applies to the Whinchat. I have only found one

nest of each, though both are common a little farther down the dale.

Every length of water has a pair of Dippers. They breed well up towards the heads of the smallest streams, and thus discount any possibility of trout fry or ova forming any part whatever of their diet.

Kingfishers are only very occasional visitors, but often stay a few days when they do arrive. None breed.

Swallows and House Martins are very numerous. Swifts do not breed here but are very frequently seen hawking over the water. I once saw a flock of several hundred strong flying westward through the quarry, but generally there are about half a dozen only at a time. The Sand Martin used to breed—a small colony of perhaps ten pairs—down by the old river, but since this has been covered over by the reservoir I have never seen above one or two birds per season, and these obviously only birds passing on somewhere.

We get a tremendous number of Cuckoos—more some years than others—possibly owing to the large number of Meadow Pipits there are about.

Chaffinches are very common, but I have only come across one Goldfinch's nest, and that was this past year. I have seen occasional flocks of the latter bird in autumn on the thistles, etc., but it is a *rara avis* in these parts. Of the Tits I have only come across the Great and Blue, both breeders and all-the-year-round residents. The Lesser Redpoll has bred once at any rate within the confines of the village. Spotted Flycatchers are very common and have increased tremendously these last few years. The Pied I have never seen near here.

And that, I believe, about exhausts all the notes I have. What time I have had to spare I have given up in great measure to this matter, but at the same time, and as I have pointed out before, I am convinced that very many of our rarer birds are completely missed owing to the deserted nature of the district. Many species are much more abundant than is the general opinion. The Hen Harriers are a notable example. If two are seen by accident every year, how many do actually pass through?

RECORDS

THE WESTERN LITTLE BUSTARD (*OTIS TETRAX TETRAX*)
A NEW Yorkshire—and British—bird. The List Committee of the British Ornithologists' Union added the above bird to the official list of British Birds at their meeting on January 12th, 1938 (*The Ibis*, 1938, p. 332). This bird was one of two shot during a Partridge drive on December 9th, 1922, at

Wadsworth, just south of Doncaster, and is in the possession of the owner of the estate, Capt. E. W. S. Folijambe, of Osberton, Notts. This gentleman kindly sent the bird up to the Natural History Museum for examination by the Committee. The destiny of the other bird cannot be traced. (*British Birds*, XXXI, p. 332.)

As this race inhabits France, Spain, Portugal, and N. W. Africa it is probable that it may have been hitherto overlooked in the British Isles, and any Little Bustards (with data) in public or private collections are worth careful examination. In the *Practical Handbook of British Birds* (II, p. 816) it states 'Both sexes in winter and summer are like the Eastern Little Bustard (*Otis tetrax orientalis*) but the ground colour of upperparts and wing coverts is of a warmer, more sandy, shade of buff, black vermiculations are usually rather finer and black marks usually less pronounced.'—H.B.B.

BLACK-THROATED DIVER NEAR BRADFORD

AN immature male Black-throated Diver, in typical winter plumage, was shot on the Leeming reservoir, Oxenhope, on February 23rd, 1938. It had been watched diving and capturing trout with ease, and five trout up to six inches in length were afterwards found in its gullet. The bird measured $26\frac{1}{4}$ inches in length; wing $11\frac{7}{8}$ inches; weight $5\frac{1}{2}$ lbs. It has been mounted for the collection at the Museum, Cartwright Memorial Hall, Bradford.—M. LONGBOTTOM.

A DERBYSHIRE LOCALITY FOR *BOREUS HYEMALIS* L.

ON February 5th last, I observed a number of individuals of both sexes of *Boreus hyemalis* L. resting on the surface of moss covering large boulders in Padley Woods, near Grindleford, Derbyshire. This is, I believe, the first published locality for this insect in Derbyshire.

Careful observations have been made on the occurrence of this insect in the Ecclesall Woods locality (Sheffield) reported in *The Naturalist*, 1938, p. 82, and individuals were seen every few days until March 1st, after which no more were noted. Of two dozen specimens observed during this period only four were males. Two pairs were taken home and kept in damp moss for observation purposes and supplied with no other food. The males lived for seven and nine days respectively, and the females for twelve and nineteen days respectively. Although this is in close accord with the results previously obtained by Withycombe (*Trans. Ent. Soc.*, Lond., 1921, p. 314), the test is hardly satisfactory, as this is practically the end of the season for these insects.—JAMES M. BROWN, Sheffield.

ATTRIBUTES OF WHALES

R. W. GRAY

WHALES lead an oceanic life and procure their food in the depths of the ocean. The lives they lead are very different from those of the land mammal.

The whale, it may be said, is nature's submarine; like these craft, it is obliged to rise to the surface at intervals and like them it can evade its enemies by disappearing below the waves.

If the above statements are correct, the whale must possess certain attributes; in other words, it must be able to do certain things.

What are the attributes it is supposed the whale must possess? And does the whale possess them?

1. *The whale must be able to breathe with safety even when the sea is rough.*

As is well known, whales are able to do this, and to do so for the following reasons:

- (a) The respiratory openings or blow-holes are valvular and are situated on the 'crown' or highest part of the animal's head.
- (b) The animal gives the business of breathing its undivided attention and, when it intends to breathe, either approaches the surface obliquely at some speed, or merely gently floats up.

The first of these movements is the usual one and is frequently described, for instance by Racovitza, who says:

'The whale, having returned to the surface, after a long immersion, emits a prolonged expiration, makes a short inspiration, dives a little, re-appears to breathe, dives again, and then many times in succession; then it makes a long inspiration and plunges into the depths for a considerable time.'

He also says:

'The number of these intermediate immersions before sounding varies according to the species. In general, whalebone whales execute but a few, the toothed whales very many. In all cetaceans, however, they are characterised by the following: . . . (2) the interval between the re-appearances is very short; (3) the animal dives only to a slight depth; . . . (5) the whale, during the time it is under water, progresses quite rapidly, usually in a straight line.'

The effort that whales require to make on these occasions depends on the roughness of the sea and on the species concerned. Whales with low crowns, such as 'Finners' or *Balenopterids*, having to exert themselves more than the Right whales with their high crowns.

The second of these movements is only adopted where the sea is very smooth, and even then only sometimes. I have

observed Greenland whales and narwhals behaving in this way among the ice, and Bottlenose whales in fine weather on the lee side of my father's ship. Dr. Anderson has made a similar observation in the case of the Gangetic Dolphin or Susu. In his paper he says :

'In rising to breathe, the Platinista may either simply expose the upper surface of the head sufficiently to bring his blow-hole above the water or, what is more common, plunge out of the water upwards, forwards and downwards, first exhibiting its long snout, followed by two-thirds of its back. At such times it emits a short blowing sound which has doubtless given rise to the term (Susu) generally applied to it along the Ganges and Bramaputra.'

Dr. Anderson also says :

'I have had the rare opportunity of narrowly observing the respiratory movements of the Dolphin from having had one alive for ten days in captivity. In its place of confinement this individual rose slowly to the surface of the water, the characteristic expiratory sound was produced, and so rapid was inspiration that the blow-hole seemed to close immediately after the expiratory act and then the animal slowly subsided.'

Exceptionally, among the ice, where there is not sufficient room for the whale to perform its usual breathing movements, the animal, at any rate in the case of some species, is obliged to push its head out of the water until its blow-hole is above the surface.

The lesser Rorqual *Balænoptera aculorostrata* has been seen behaving in this way. Captain Scott, in the diary of his last expedition, says :

'They frequently emerge through the narrow fissures bolt upright with their heads above the broken ice to blow.'

Scott also says :

'Several times one rested its head upon a floe . . . with its nostrils just on the water line ; raising itself a few inches it would blow and then subside again for a few minutes to its original position, with its snout resting on the floe.'

Still more exceptionally where the sea is freezing and the cetacean is in danger of finding its access to the air cut off, it will push its head right on to the recently-formed ice.

Porsild, in a paper entitled 'Savssats,' describes narwhals and White whales behaving like this.

It follows from what has been said that whales can only breathe with safety when they are awake. This being the case, they must either contrive to do without sleep, or sleep while holding their breath.

As explained in my paper, 'The Sleeping Habits of Whales,' *The Naturalist*, November, 1933, the answer in my opinion, is in accordance with the second alternative.

2. *The whale must be able to feed at considerable depths.*

To enable it to do so the whale must possess the following attributes :

- (a) The whale must be able to remain under water 15 or 20 minutes; according to Scoresby the usual time it does so when feeding.

As is well known, whales are able to do this. The adaptations which enable them to do so will be discussed later.

- (b) The whale must be able to descend quickly.

This it can also do as is well known. The adaptations which enable it to do so obviously are a smooth skin, a stream-lined body, and a powerful horizontal tail.

- (c) The whale must make good use of its time when under the water.¹

In the case of the ' Finner ' whales or *Balaenopterids* which feed largely on shrimp-like crustaceans called Euphausians, the animal must be provided with some means of catching its prey wholesale, hence the whalebone which enables the whale to sift or sieve its food out of the water.

In the case of the Greenland whale, which feeds on still smaller creatures, termed Copopods, the animal requires a still larger and more efficient feeding apparatus, hence the great length of its whalebone plates, the great extent of the filtering surface, and the very large and powerful tail.

- (d) The animal must be able to ascend or return to the surface quickly.

This the whale obviously can do. The adaptations by which it is enabled to do so will be discussed later.

- (e) For obvious reasons, when a whale comes up to breathe, it must not spend too much time at the surface. In other words, it must have a very efficient respiratory apparatus.

Is this achieved by increasing the area of the respiratory surfaces and by making the lungs more elastic and vascular ?

As regards the first point, according to Wislocki, the area of the respiratory surface in the case of the porpoise is nearly 50 per cent. greater than in man.

As regards the second point, the celebrated Hunter in a famous paper says :

' The lungs are two oblong bodies, one on each side of the chest, and are not divided into smaller lobes as in the human subject. They are of considerable length, but not so deep between the fore and back part as in the quadruped, from the

¹ According to a recent *Discovery* Report the Copopod *Calanus acutus* at certain times deserts the surface water and sinks to a depth of between 750 and 1,000 metres.

heart being broad, flat, and of itself filling up the fore part of the chest. They pass further down on the back part than in the quadruped, by which their size is increased, and rise higher up in the chest than the entrance of the vessels, coming to a point at the upper end.

‘From the entrance of the vessels, they are connected downwards along their whole inner edge by a strong attachment (in which there are some lymphatic glands) to the posterior mediastinum. The lungs are extremely elastic in their substance, even so much as to squeeze out any air that may be thrown into them, and to become almost at once a solid mass, having a good deal the appearance, consistence, and feel of an ox’s spleen. The branches of the bronchiæ, which ramify into the lungs, have not the cartilages flat, but rather rounded; a construction which admits of greater motion between them. The pulmonary cells are smaller than in quadrupeds, which make less air necessary, and they communicate with each other, which those of quadrupeds do not, for by blowing into one branch of the trachea, not only the part to which it immediately goes but the whole lungs are filled. As the ribs in this tribe do not completely make the cavity of the thorax, the diaphragm has not the same attachments as in the quadruped; but is connected forwards to the abdominal muscles, which are very strong, being a mixture of muscular and tendinous fibres. The position of the diaphragm is less transverse than in the quadruped, passing more obliquely backwards, and coming very low on the spine, and higher up before, which makes the chest largest in the direction of the animal at the back, and gives room for the lungs to be continued along the spine. The parts immediately concerned in inspiration are extremely strong, the diaphragm remarkably so. The reason of this must at once appear, it necessarily requiring great force to expand the chest in a dense medium like water, especially too when the vacuity is to be filled up with one that is rarer and is to water a species of vacuum, the pressure being much greater on the external surface than the counter pressure from within. But expiration on the other hand must be much more easily performed.’

Is the efficiency of the respiratory apparatus also increased by giving the whale a very large heart?

Dr. Alderson, in a paper referring to a Sperm whale stranded on the Yorkshire coast in 1835, says:

‘In our examination of particular parts, the size of which is generally regulated by that of the whole animal, if we have only been accustomed to see them in those which are small or middle-sized, we behold them with astonishment in animals so far exceeding the common bulk as the whale. Thus the heart and aorta of the spermaceti whale appeared prodigious, being

too large to be contained in a wide tub, the aorta measuring a foot in diameter. When we consider these as applied to the circulation, and figure to ourselves that probably *ten or fifteen gallons* of blood are thrown out at once stroke, and moved with an immense velocity through a tube of a foot in diameter, the whole idea fills the mind with wonder.

'The diameter of the aorta . . . was $12\frac{1}{4}$ inches; thickness of the coat of the artery $\frac{7}{16}$ of an inch. In the sinus behind the valves, the thickness was not greater than that of the pulmonary artery. Length of the heart from the apex to the valves of the aorta, 3 feet 10 inches. The columnæ carneæ were very large, and one of the cordæ tendinæ, in the tricuspid valve, measured 7 inches in length. Near the middle of the left ventricle the wall of the ventricle measured about 5 inches. The diameter of the coronary artery was $1\frac{2}{3}$ inches. On the left ventricle being laid open, its capacity was guessed by some farming gentleman present to contain from eight to ten gallons! The heart was destitute of fat.'

If the foregoing conclusion is correct, each time a whale breathes it must expel the entire contents of the lung. The 'blast' or breath of a large whale is described as terrific; it rises fifty or more feet into the air, can be heard a mile away and can be seen very much further.

The efficiency of the lung appears to be still further increased by compression of the inspired air in the intervals between the respirations, hence the white appearance of the 'blast' when this imprisoned and compressed air is allowed to escape.

3. *When attacked the whale must be able to descend to very great depths.*

To enable it to do so the whale must possess the following attributes:

(a) It must be able to descend quickly.

As I have explained elsewhere,¹ we know that whales can do this. When a Greenland whale or Bottlenose is harpooned, it draws out the line very quickly and obviously reaches a very great depth. At the same time the bollard or wooden post in the boat's bow, around which the line is caused to run, smokes, and, unless the line is wetted, catches fire. And if the line should happen to run 'foul,' the boat is liable to be dragged down. Scoresby estimated the rate of the Greenland whale's descent when harpooned at eight or nine miles an hour and this notwithstanding the severe friction to which the line is subjected.

¹ *Nature*, 1927, 'The Depths to which Whales descend.' *Nature*, 1935, 'Do Whales descend to Great Depths?' *The Naturalist*, 1932, 'The Diving Powers of Whales.'

- (b) It must be able to withstand the pressure of the water without injurious effect.

Again as I have explained elsewhere, we know that Greenland whales and Bottlenose whales are able to do this and come up again none the worse except for a temporary exhaustion.

- (c) The blow-hole valves must be capable of preventing the water reaching the lungs.

This they appear able to do. Knox, speaking of the blow-hole valves of a fin-whale, says :

‘The mechanism is admirable, and would sustain any pressure from above although the animal descended to thousands of fathoms.’

- (d) The whale must be able to retain the air in its lungs, notwithstanding the severe pressure applied to its chest.

This is achieved by means of numerous sphincter muscles. Wislocki, who examined the lungs of a porpoise, found that the smaller bronchioles possessing a diameter of less than 0.5 mm. have muscular sphincter valves. He says :

‘The individual sphincters are weak, but there are probably several million of them, and each imprisons but a minute amount of air, so that all of them working together are doubtless capable of preventing the escape of air even into the trachea under any pressure to which the animal cares to subject itself.’

- (e) A whale must be able to hold its breath for a very long time.

We also know that the whale can do this. Scoresby, referring to the Greenland whale, says :

‘The average stay under water, of a wounded whale, which steadily descends after being struck, according to the most usual conduct of the animal, is about 30 minutes. The longest stay I have ever observed was 56 minutes ; but in shallow water, I have been informed, it has sometimes been known to remain an hour and a half at the bottom after being struck, and yet has returned to the surface alive.’

What are the adaptations which enable the whale to do this ? Are the lungs increased in size so as to hold a very large amount of air, and does the blood circulate through them while the whale is under water as in the human diver ? Or does the whale short-circuit its pulmonary circulation and subsist on the oxygen stored in its very ample supply of blood ?

For the following reasons, the correct answer appears to be in accordance with the second alternative :

- (i) The lungs of whales do not appear to be excessively large.
- (ii) Each time a whale comes up to breathe it does not take

one, but a number of breaths. Scoresby, referring to the Greenland whale, says :

‘ In their usual conduct, whales remain at the surface to breathe, about two minutes, seldom longer ; during which time they “ blow ” eight or nine times . . .

Beale, speaking of the Sperm whale, says :

‘ At each breathing time the whale makes from sixty to seventy expirations and remains . . . at the surface ten or eleven minutes.’

- (iii) Whales appear to possess a large amount of blood. Hunter, referring to the blood of whales, says :

‘ It is certain that the quantity of blood in this tribe . . . is comparatively larger than in the quadruped, and therefore probably amounts to more than that of any known animal.’

Whales possess a vascular network, obviously capable of containing an extra quantity of blood.

Hunter, in his famous paper, says :

‘ The general structure of the arteries resembles that of other mammals and where parts are nearly similar, their distribution is likewise similar. The aorta forms its usual curve and sends off the carotid and subclavian arteries. Animals of this tribe, as has been observed, have a greater proportion of blood than any other known and there are many arteries apparently intended as reservoirs, where a large quantity of arterial blood seemed to be required in a part and vascularity could not be the only object. Thus we find the intercostal arteries divide into a great number of branches in a serpentine course between the pleural ribs and their muscles—making a thick substance similar to that formed by the spermatic artery in the bull.’

- (iv) Wislocki, referring to the oxygen-absorbing capacity of the blood, says :

‘ . . . the blood of cetaceans . . . is richer in hemoglobin than usual, and hence can store more oxygen.’

- (v) There is some evidence for believing that the pulmonary circulation is capable of being short-circuited. According to Ommaney, in the fin-whale, the ductus arteriosus is very wide and has a spacious lumen. According to the same anatomist :

‘ Lacoste and Baudrimont found annular folds in the muscular walls of the pulmonary artery of *Delphinus delphis*, which, the authors suggested, might have the effect of impeding the flow of blood in that artery when fully erected in its lumen. Similarly, the small intra-pulmonary branches of the artery “ se pulverisent en

bouquets extremements touffus d'arterioles tres onduleuses " the effect of which would also be to block the flow of blood through the lungs.'

- (vi) If the blood circulated through the lungs as in the native pearl or sponge diver, the whale would get diver's paralysis when it was coming up, which it certainly does not do.
- (vii) As explained later, were it in accordance with the other alternative, the whale would drown at birth.
- (f) The whale must be able to return to the surface, notwithstanding that its lungs are in a compressed condition and its buoyancy negative.

To help the whale to do this it is provided not only with a powerful tail, but also with a cork-jacket or lifebelt in the form of many tons of oil, a substance the specific gravity of which at blood heat is considerably less than that of cold sea water and which is moreover compressible. The oil is accommodated in the cranial and other bones, but principally in the *pars reticulatica* or deepest layer of the skin, termed the 'blubber.' A whale at the depth of a mile is in the position of a bird which has to fly up to an altitude of 5,000 feet and has only a limited time to do it.

4. *The whale must be able to increase and diminish its buoyancy at pleasure, in other words it must be able to sink down and float up when it wishes.*

As I have explained elsewhere, whales are able to do this.¹ Scoresby says that when a Greenland whale is extended at the surface, it can sink down in a second or two or less beyond the reach of its human enemies.

The whale doubtless does this by means of its chest and lungs. When it wishes to sink, it compresses its lungs by means of certain muscles. On the other hand, when it wishes to float, it relaxes the same muscles and allows the lung-air to expand.

5. *When the whale is weaned, its whale bone is necessarily still very short; consequently, it must be able to survive until its whalebone plates are long enough to enable the animal to capture its food.*

The whale, of course, is able to do this, and it doubtless does so because at that time its blubber is very thick.

Scoresby, speaking of a small whale he captured in 1822, says:

'Though it was little above the age of a "sucker," the

¹ *Nature*, March 17th, May 5th, June 22nd, 1928, 'The Buoyancy of Whales.'

whalebone only measuring 2 feet 8 inches (including the part embedded in the gum), it was so extremely fat that we obtained a quantity of blubber from it, estimated to yield six tons of oil; a produce equal to that of a "size fish" of six or seven feet bone.'

Concerning another he further adds:

'This whale, though a "sucker," was 19 feet in length, and 14 feet 5 inches in circumference at the thickest part of the body. The external skin on the body was an inch and three-quarters thick, being about twice the thickness of the same membranes in a full-grown animal. The blubber was, on an average, five inches in thickness; the largest of the whalebone measured only twelve inches, about one-half of which was embedded in the gums. The external part of these fringes, not exceeding six inches in length, did not seem sufficient to enable the little whale yet to catch, by filtration out of the sea, the shrimps and other insects on which the animal in a more advanced stage is dependent for its nourishment. Maternal assistance and protection appeared, therefore, to have been essential for its support.'

The logs of Scoresby (Senior) contain the following corroborative evidence:

'1795, 21st May. They were all of them (bone 3 feet; 2 ft. 6 ins.; and 2 ft. 8 ins.) very ffat (sic) fish. Ye last killed one in particular I suppose to boil eight tuns of oil.'

'1797, May 1st. Struck a fish (about 2 feet bone). Very ffat (sic).'¹

'1817, June 13th. D—— C—— struck a fish which was soon killed. It was about 2 feet bone and very fatt (sic).'

6. *The whale must be able to survive death from asphyxia at the time of its birth.*

An interval must elapse between the moment of its birth and the moment at which it draws its first breath, and during this interval it must exert itself, because its body is heavier than the water and this is so for two reasons. Firstly, its blubber has not yet begun to form; secondly, its lungs are still in an airless condition. How is this achieved? Firstly, by delaying gestation until the animal is in an advanced stage of development and able to lead an active life from the very moment of its birth and, secondly, probably by providing it with a large supply of oxygenated blood.

¹ In the time of the Scoresbys a tun of oil (252 gallons wine measure) weighed only about 17½ cwt.

YORKSHIRE NATURALISTS' UNION: VERTEBRATE ZOOLOGY SECTION

E. WILFRED TAYLOR

A MEETING of the Vertebrate Section of the Yorkshire Naturalists' Union was held in the library of the Church Institute, Leeds, on Saturday, February 19th. The Sectional Meeting was preceded by a meeting of the Yorkshire Wild Birds' and Eggs' Protection Acts Committee.

At the Sectional Meeting the chair was taken by Mr. C. W. Mason and the minutes of the previous meeting were read and confirmed. The Secretary read a letter from the Wild Fowl Enquiry Committee thanking the Vertebrate Section for its reports on the present status of the Anatidae in Yorkshire.

Mr. H. B. Booth read a paper entitled 'The Peregrine Falcon at the Eyrie' illustrated by a fine series of photographs obtained by a number of photographers. The eyrie was situated on a rocky island of the Scilly group and owing to its position the erection of an observation hut presented unusual difficulty. The clutch of four eggs was completed on April 14th and on May 18th all had hatched. From that date to the time when the young flew, the birds were under almost continuous observation. One of the adults was extremely shy and rarely paid a visit and as this was the larger of the two there seemed little doubt that the Tiercel in this instance undertook the feeding of the young, the Falcon devoting herself to the capture of food.

After feeding the young, very tenderly, the Tiercel generally sat on a favourite rock and either preened his feathers or went to sleep. It was noticeable that the young kept out of the sun as much as possible, obtaining shelter under a rocky ledge. Although the island was many miles from human habitation the eyrie swarmed with blue bottle flies attracted by the remains of birds scattered around. The young were 23 days old when they flew and one was noticeably smaller and weaker than the others.

A series of slides was then shown illustrating the practice of falconry in the County of Yorkshire.

Miss Ellen Gallwey next read a paper on the 'British Grass-snake' and dealt first of all with its habits and habitat. Thorne Waste, near Doncaster, was cited as a well-known haunt and the former absence of the species from Scotland was noted. The lecturer had assisted in the recent introduction of the species into Argyleshire where there was evidence of its survival.

The Grass-snake is very fond of water and able to swim submerged for considerable distances. It has been known to attain a length of almost six feet, but a specimen of 40 inches may be considered large.

The lecturer next described the developments of the embryo in the egg and the main anatomical and other peculiarities. The saliva is toxic as is also the blood of the Adder and it is curious that the Grass-snake is almost unaffected by the venom of its poisonous relative. The stomach secretes free Hydrochloric Acid, which perhaps accounts for the remarkable powers of digestion. Other anatomical features are the elastic ligaments which allow the jaws to become widely separated when swallowing large prey and the great developments of the right lung at the expense of the almost rudimentary left organ.

The operation of casting the skin was described in detail and the lecturer also referred to an operation she performed to remove a lump from the side of a captive Grass-snake. It was found that part of a frog had passed through the intestines and the ribs to lodge between the latter and the skin. The incision was stitched up and the snake made a good recovery.

The lecture was very comprehensive and well illustrated by photographs and diagrams.

Mr. H. G. Wagstaff gave a paper entitled 'The Home Life of the Buzzard' and recounted his experiences while hunting for a suitable eyrie in Central Wales. Many nests found were in unsuitable positions and many more were robbed by egg collectors, but at last a very suitable site was discovered and a hide erected on the side of a cliff. Ravens also nested in the vicinity and the lecturer observed that they rarely touched dead sheep except to remove the eyes, lips and tongue.

The Buzzards' eyrie was on a rocky ledge and built of gorse stems to which branches of Mountain Ash, Oak, and Spruce were added from time to time. Near by grew a Mountain Ash and here one of the parents frequently sat keeping a watchful eye over a wide range of country. The continuous sound of falling water helped to deaden any noise made by the photographer in the hide.

The nest eventually contained two young and an addled egg and the food brought by the parents consisted mostly of moles; rabbits, which were not plentiful in the area, were only brought on two occasions. When hunting the Buzzards appeared to keep to their own territory and their flight was so noiseless that they appeared to visit and depart from the eyrie as if by magic, if the movement was not seen. Their arrival could, however, be anticipated by noting the alarm notes of a pair of Wrens and Chaffinches, particularly the latter. Sometimes two carcasses were brought at once, one in each foot, and during a hot day period little or nothing was brought to the nest.

The lecturer decided to try to obtain photographs of the Buzzards away from the eyrie and pegged down the carcasses of rabbits as baits. One of the first visitors was a Stoat but after many disappointments a series of photographs of the feeding Buzzard was obtained. Ravens rarely showed any interest and preferred instead to gorge themselves on bilberries, as many as 22 being so engaged at one time.

The photographs illustrated the variety of the markings of the adult Buzzard and the lecturer noted one bird of a light fawn colour. The slides were of very exceptional quality both from an ornithological and a pictorial point of view.

Messrs. G. R. Edwards and V. S. Crapnell showed a selection of moving picture studies of birds and dealt with such a great variety of species that it is difficult to do full justice in this report. Some of the film was in natural colours and the studies of the Woodcock and Snipe and also of the Crested Tit and Greenshank deserve special mention. The development of this interesting branch of bird photography is being followed with considerable interest.

Finally a vote of thanks to the lecturers and lanternists was carried unanimously, special thanks being accorded to Mr. Wagstaff for making a special journey from the Midlands.

REVIEWS AND BOOK NOTICES

Proceedings of the Liverpool Geological Society, XVII, 101-209. 1937, recently issued, emphasises the value of such local societies. The part contains seven papers and of these five deal with local geology. They include one by Professor Boswell on the Geology of the New Mersey Tunnel, two by Dr. Neavesson on the Carboniferous and Glacial Drift of North Wales, and two by Mr. T. A. Jones dealing with the local superficial deposits. These last two papers are by a distinguished Liverpool amateur geologist—we hope that Yorkshire amateur geologists will follow his example and put their observations into print. The Proceedings also include a valuable paper by Professor Read in which he reviews recent work in metamorphic geology in which time was concerned.

Among British Wild Animals, by Melville Nicholas, pp. xii + 167, with 27 photographic illustrations. Methuen, 8/6. This is a

record of first-hand observations and as it deals exclusively with British land mammals is to be welcomed as a serious contribution to a subject on which authentic information is still much needed. Mammals are notoriously difficult to watch in the wild state, and the author of this work has obviously made intensive studies of most of the creatures he deals with. The illustrations are excellent.

NEWS FROM THE MAGAZINES

The Transactions of the Society for British Entomology, Vol. 5, Part 1, contain a monograph on the British Short-Palped Crane-flies (*Tipulidae Brevipalpi*), by F. W. Edwards. The monograph runs to 168 pages and includes five plates with 103 figures of wing venation and markings and 32 text figures. It gives keys to the 214 British species with an adequate description of each and a short statement of the distribution, 77 species being noted as occurring in Yorks. (The Yorkshire list contains altogether 154 species, a very satisfactory proportion of the British total.) The new (16) species are *Limonia annulata* L. Moray; *L. bezzi* Alex., Portland; *Elliptera omissa* Egg., Yorks. (Patel Bridge); *Dicranota brevitarsis* Bergr., Durham, Westmorland, Inverness, Perth and Sutherland; *Limnophila heterogama* Bergr., Salop; *Oxydiscus ecalcaratus* Edw., Denbigh, N. Devon; *Lipsothrix ecucullata* Edw., Sutherland; *L. nigrisigma* Edw., Lancashire; *L. nervosa* Edw., New Forest; *Gonomyia bifida* Tonn., Devon; *Rhabdomastix hilaris* Edw., Inverness, Perth; *R. inclinata* Edw., Yorks. (Mulgrave Woods); *Erioptera fusculentia* Edw., Herts., Middlesex, Salop, Suffolk, Yorks. (Nidd); *E. scotica* Edw., Ross; *E. meigenii* Zett., Inverness, and *Ormosia danica* Niels., Arran, Inverness, Perth, Merioneth, Devon, and Yorks. (Bilsdale). The monograph is a fine piece of work and should be in the hands of every student of the British Diptera.

The Journal of the Society for British Entomology, Vol. 1, Part 8, contains 37 notes, more or less short. Of these the following may be noted:—'Notes on the Mycetophilidae (Dipt.) obtained by Dr. C. B. Williams in a light trap at Harpenden, Herts.,' by F. W. Edwards; 'British Ephemeroptera, Plecoptera and Trichoptera in 1936,' by D. E. Kimmins (localities from Lincs., Notts., Derby, Cheshire, Lancs., Yorks., Durham, Northumberland, Westmorland, Cumberland and Isle of Man); 'On the Occurrence of Nematodes in *Corixa geoffroyi* Leach (Hemiptera, Corixidae),' by C. J. Banks (with figure); '*Peronea hastiana* Linn. ab. nov. *postmaculana* (Lep.),' by W. P. Curtis (with plate); 'Some records of bred Tachinidae (Diptera),' by E. Taylor; '*Eupithecia distinctaria* Herr.-Schäff (Lep.),' by W. P. Curtis (two plates); 'Breeding Records of Diptera, 1937,' by C. H. Wallace Pugh; '*Plusia moneta* Fabr. (Lep.) in Scotland,' by F. C. Garrett and 'A note on a Thrush feeding its young on Emperor and Tiger Moths,' by R. Cottam.

The Entomologists' Monthly Magazine for April contains 'A Preliminary List of the Coleoptera of Windsor Forest,' by H. Donisthorpe; 'On the Coleoptera, etc., of the Faroe Islands,' by J. J. Walker; 'Two British Species of Atomaria (Col., Cryptophagidae) new to the European List,' by A. A. Allen (*A. lewisi* Reitt. in cut grass at Blackheath, *A. elevata* Allen, Isle of Grain, North Kent, rather common amongst decaying seaweed and refuse); 'A note on the Stephensian Species of *Gyrophæna* (Col. Staphylinidae),' by K. G. Blair; 'A second British species of *Leopoldius* Rond. (Conopidae),' by C. J. Wainwright (*Conops* (*Leopoldius*) *brevirostris* Germ., Worcs., Berks. and Hants.); 'The Siphunculata or Sucking Lice recorded from the Pacific Islands,' by G. B. Thompson, and 'Preliminary Notes on the Genus *Popilius* Kaup. (Col. Passalidae),' by J. R. Dibb.

THE VEGETATION OF YORKSHIRE AND SUPPLEMENT TO THE FLORAS OF THE COUNTY

(Continued from page 108)

ROSA—continued.

R. dumetorum Thuill.

V.C. (61), 62, 63, 64, 65.

var. *typica* W.-Dod. V.C. 62, 65? Near Thirsk; J.G.B., 1864. Hedges at Sowerby; J.G.B., 1864. (Both gatherings in herb. W.-Dod). By Tees, Park End, Holwick, Upper Teesdale; E.B.B., 1919. Verified by W.-Dod about 1922, but in his List he queries V.C. 65.

f. *urbica* (Lem.) W.-Dod. V.C. 62, 64, 65. Thirsk and Sowerby; J.G.B., 1864 and 1865.

f. *semiglabra* (Rip.) W.-Dod. V.C. 62, 65.

var. *calophylla* Rouy. V.C. 65.

var. *platyphylla* (Rau) W.-Dod. V.C. 62.

var. *sphaerocarpa* (Pug.) W.-Dod. V.C. 62.

var. *hemitricha* (Rip.) W.-Dod. V.C. 65.

var. *Deseglisei* (Bor.) Chr. V.C. 65. (Lowgill Sedbergh, fide Lees.)

var. *incerta* (Déségl.) W.-Dod. V.C. 62, 64, 65. Bank of Ure, Ripon; T. Nicholson, 1879.

var. *Lucandiana* (Déségl. et Gill.) W.-Dod. V.C. 63. Askern; G. Webster, 1882 (det. Déséglise), see *Rep. B.E.C.* 1882, 71. Norton near Doncaster; G. Webster, 1883, see *Rep. B.E.C.* 1883, 88.

var. *mercica* W.-Dod. Bank of Ure, Ripon; T. Nicholson, 1879, see *Rep. B.E.C.* 1879. 'Probably from the original bush on which Christ founded his *R. tomentella* var. *Nicholsoni*, a bad variety, see *Rev. Brit. Roses*, 73.' W.-Dod.

var. *fanasensis* R. Kell. V.C. 62. Strensall Common; G. Taylor, 1932. Tolleston Forest, *ibid*, see *Rep. B.E.C.*, 1935, 73.

R. Afzeliana Fr. (*R. glauca* Vill.)

V.C. 62, (63), 64, 65. Common in the dales where it largely replaces *R. canina* forms.

var. *Reuteri* (Godet) W.-Dod. V.C. 62, 65.

f. *Crepiniana* (Déségl.) W.-Dod. V.C. 62. Hedges at Kilvington, near Thirsk; J.G.B., 1864.

f. *transiens* (Gren.) W.-Dod. V.C. 64, 65. Slaidburn; W.A.S., 1925 (conf. A. H. W.-Dod).

var. *glaucophylla* (Winch) W.-Dod. V.C. 62, 64, 65. Near Thirsk; J.G.B., 1864. Near Slaidburn; W.A.S., 1925 (conf. A. H. W.-Dod)

f. *myriodonta* (Chr.) W.-Dod. V.C. 64. Hedge near Ribble, Long Preston; W. M. Rogers, 1890. Between Gisburn and Long Preston; C. Bailey, 1889.

f. *adenophora* (Gren.) W.-Dod. V.C. 64, 65. Near Slaidburn; W.A.S., Sept., 1925 (conf. A. H. W.-Dod).

var. *stephanocarpa* (Déségl. et Rip.) W.-Dod. V.C. 65.

var. *subcanina* (Chr.) W.-Dod. V.C. 62, 65. Between Woodend and Thirsk; J.G.B., 1864. Near Winch Bridge, Upper Teesdale; C. L. Wilde, 1934. Det. E.B.B.

var. *denticulata* (R. Kell.) W.-Dod. V.C. 65. Winch Bridge, Upper Teesdale; C. L. Wilde, 1934. Det. E.B.B.

f. *subcomplicata* (Hayek) W.-Dod. V.C. 65. Winch Bridge, Upper Teesdale; C. L. Wilde, 1934. Det. E.B.B.

var. *Briqueti* (R. Kell.) W.-Dod. V.C. 65. Winch Bridge, Upper Teesdale; C. L. Wilde, 1934. 'From three separate bushes, all of a rather weak form but all clearly *Briqueti*.' E.B.B.

R. Coriifolia Fr.

V.C. 62, 63, 64, 65.

var. *typica* Chr. V.C. 62, 65.var. *subglabra* R. Kell. V.C. 65 (See *Rep. B.E.C.*, 1935, 74). Near West Burton, Aysgarth; F. A. Rogers, 1890.f. *subobovata* Rouy. V.C. 64, 65. Billy Bank, Richmond; J. Ward, 1870.f. *implexa* (Gren.) W.-Dod. V.C. 62, 64, 65. Long Preston, M.W. Yorks. W. M. Rogers, 1890.var. *Watsoni* (Baker) W.-Dod. V.C. 64, 65. Hedges, etc., Long Preston, frequent W.M.R., 1890.f. *subhispidata* W.-Dod. V.C. 62, 65. Redmire and Aysgarth; W.M.R., 1890.var. *Bakeri* (Déségl.) W.-Dod. V.C. 62, 64, 65. Sowerby, near Thirsk; J.G.B., 1864. Holgate, near York; G. Webster, 1877.f. *setigera* W.-Dod. V.C. 62. Between Staithes and Hinderwell; J. Groves.f. *cryptopoda* (Baker) W.-Dod. V.C. 62, 65. Between Staithes and Hinderwell; J. Groves, 1894. Aysgarth; W.M.R., 1890.var. *Lintoni* N. J. Sch. V.C. 62, 63 ? 64 ? 65.var. *Hausmannii* Braun. V.C. 62. (See *Rep. B.E.C.*, 1935, 76). Hinderwell, N. Yorks. Groves, 1894.**R. obtusifolia** Desv.

V.C. (61), 62, 63, 64, 65.

var. *typica* W.-Dod. V.C. 65.var. *tomentella* (Lem.) Baker. V.C. 62. Near Thirsk; J.G.B., 1864.f. *canescens* (Baker) W.-Dod. V.C. 62 ? 65 ? Cult. Kew, from a North Yorks. specimen, station not named. J.G.B.var. *decipiens* Dum. V.C. 62.f. *glandulosa* Crép. V.C. 62, 63. Riccadale. Helmsley; W. M. Rogers, 1890.var. *Borreri* (Woods) W.-Dod. V.C. 62.var. *sclerophylla* (Scheutz) W.-Dod. V.C. 62, 64. Thirsk and Sowerby; J.G.B., 1864. Ripon; G. Nicholson, 1879, and Miss Todd, 1927.**R. villosa** L.

V.C. (61), 62, (63), 64, 65. Lees says 'it is evenly distributed from the north of the county to the south and from east to west.'

var. *pomifera* (Herrm.) Desv. V.C. 65. Aysgarth; F. A. and W. M. Rogers.var. *mollis* Sm. V.C. (61), 62, (63), 64, 65. Camp Hill near Gates Wood, Knaresborough; ? F. A. Rogers, 1900. Clapham; H. T. Mennell, 1881. Grass Woods; J.F.P. Park Gill, Kettlewell; F.A.L. Aysgarth; J. A. Wheldon, 1896. Doubtless frequent throughout the country.f. *glandulosa* W.-Dod. V.C. 62, 64, 65. Specimens from Thirsk, Ayton Moor near Scarborough, Long Preston, Settle and Richmond in herb. W.-Dod. E. B. Bishop has the form from Park End Holwick, Upper Teesdale.f. *cærulea* Woods. V.C. 62, 64, 65. Rievaulx, Holgate, Richmond and Winch Bridge (in herb. W.-Dod). Grass Woods, Grassington, Dib Scar End; J.F.P.**R. Sherardi** Davies

V.C. 61, 62, 64, 65.

var. *omissa* (Déségl.) W.-Dod. V.C. 61, 62, 64, 65. Roman road near Bridlington; H. Fisher. Near Thirsk; J.G.B., 1864. Lower slope of Dib Scar, Coniston; J.F.P., 1910, (teste A. H. W.-Dod).

- Knipe Wood and Grass Wood ; F.A.L. Near Richmond ; F. A. Rogers, 1890. Holwick, Upper Teesdale ; E. B. Bishop, 1919.
 f. *resinoides* (Crép.) W.-Dod. V.C. 62, 65. Thirsk ; J.G.B. Hillside along Reeth road, near Richmond ; F. A. Rogers, 1890. Winch Bridge, Upper Teesdale ; C. L. Wilde, det. E.B.B.
 var. *suberecta* (Ley) W.-Dod. V.C. 62, 65. Hedge near Thirsk ; J.G.B., 1864. Near Winch Bridge, Upper Teesdale ; C. L. Wilde. 'Immature but probably this.' E.B.B.
 f. *glabrata* Ley. V.C. 65. Near Winch Bridge, Upper Teesdale ; C. L. Wilde. 'Immature but probably this.' E.B.B.
- R. Hurstiana** Harrison.
 V.C. 62.
- R. tomentosa** Sm.
 V.C. (61), 62, (63), 64, 65. Of this Dr. Lees states : 'I could now only with great unsafety give stations for the 15 forms, or some of them. The bushes do not remain the same year after year ; my distinct impression is that *R. tomentosa* in aggregate has on the whole declined, grown scarcer and less obvious in the hedgerows of the middle land (300-750 ft.), since the days of 1870-80.'
 var. *typica* W.-Dod. V.C. 62, 64, 65. Whitcliffe, near Richmond ; J. Ward, 1870. By limekilns near Ebbing (? Well), Settle ; F. A. Rogers, 1890.
 f. *eglandulosa* W.-Dod. V.C. 64.
 var. *pseudo-cuspidata* (Crép.) Rouy. V.C. 62, 64, 65. Acomb near York ; G. Webster, 1883.
 f. *cuspidatoides* (Crép.) W.-Dod. V.C. 64.
 var. *dumosa* (Pug.) Rouy. V.C. 64. Near Austwick Moss ; H. Phillips, 1935. Det. E.B.B.
 var. *scabriuscula* Sm. V.C. 62, 65. Near Richmond ; J. Ward, 1870.
 f. *foetida* (Bast.) Ser. V.C. 62.
 var. *sylvestris* (Lindl.) Woods. V.C. 62, 64. Boltby near Thirsk ; J.G.B., 1864. Studley Woods ; J.G.B., 1864.
- R. rubiginosa** L.
 V.C. (61), 62, (63), (64), 65. Lees states 'perhaps native at Spurn ! Danes Dyke ! and Levitt Hag, Conisbro'.
 var. *typica* W.-Dod. V.C. 65 ?
 var. *rotundifolia* Rau. V.C. 62.
- R. micrantha** Sm.
 V.C. (62), (63), (64), 65.
 var. *typica* Chr. V.C. 65. Etchell Crag pastures, Thorner, V.C. 64, a few bushes ; J.F.P., 1902. Agreed to as *micrantha* by W.-Dod. but not included for V.C. 64 in his List.
- R. pendulina** L., **R. pyrenaica** Gouan., **R. alpina** L., and **R. virginiana** Miller (*nitida* Willd., *lucida* Ehrh.) occur here and there in neglected shrubberies.
- Pyrus Malus** L.
 First Record, 1377, Calverley Charter (*Thoresby Soc.*, No. 254), *vice* Salt, comm. S. Margerison. 'Wm. de Calverley grants to Wm. de Bramley his wood called Miln Wood, and the underwood of Frith, to be cut down and burnt (for charcoal), the small Oaks but not Wood Apples nor Ashes.'
- P. communis** L. Denizen.

Pyrus aucuparia (L.) Ehrh.

P. intermedia Ehrh. (*P. scandica* Fr.).

Alien in Yorkshire.

P. Aria (L.) Ehrh. Denizen.

var. *rupicola* (Hedl.). Not in East Riding Flora.

var. *latifolia* (Lam.) Syme, *forsitan decipiens* (Elwes and Henry). Dib Scar and Grasswood above Dewbottom Scar, J.F.P. Bastow Wood! The growth here (especially the younger trees) is certainly nearer Syme's broad-leaved, few-veined, flocculent felted plant than the oboval downward tapering leaved *rupicola*. Yet I cannot conceive of the two as distinct species. Rev. E. S. Marshall says, 'Not true *latifolia*, but the *Sorbus* section is very puzzling and much remains to be done with it.'

P. torminalis (L.) Ehrh. Alien.

Mespilus germanica L. The Medlar. Alien.

Cydonia vulgaris Pers. The Quince. Alien.

C. japonica Thumb. and *C. Maulei* are occasionally seen on sites of old gardens.

Cratægus Oxyacantha L.

I imagine *C. monogyna*, *C. laciniata* and *C. kyrtostyla* are strains or stages due to cross fertilisations or sital compulsions, the *C. oxyacanthoides* invariably a 'Quickset' introduction.

Other strangers: *C. Crus-galli* L., *C. coccinea* L., *C. uniflora* Moench. and *C. Azarolus* L. Aliens all, they may conceivably be bird sown sometimes.

Cotoneaster microphyllus Wallich.

Alien. Quite naturalised or by way of becoming so in West Yorkshire. About railway banks near Newton-Kyme! J.F.P. Scars behind Tarn House, Malham. W.A.S.

C. nummularia Lindl. (*C. Lindleyi* (Steud) Kew List).

Bird sown on Linton Common, J.F.P.!

Amelanchier canadensis (L.) Med.

A single old tree—possibly bird sown—among Alders by the Oak Beck below Birk Crag, Harrogate, J. Farrah, 1890!

SAXIFRAGACEÆ

Saxifraga aizoides L.

Not in East Riding Flora. Winder Fell, Sedbergh, J. Backhouse! High Main limestone on Penyghent and washed down on the north-east, Foxup side, 1896, J.F.P. Black Force, Howgill, 1902, J.F.P.

S. oppositifolia L.

Only in West Riding Flora. Moughton Fell, Misses Thompson and F. J. Hanbury (*Nat.*, 1891). Head of Heseltine Gill, just below the 'Giant's Graves,' 1902, J.F.P.

S. hypnoides L.

Not in East Riding Flora. Varying a good deal from type in direction of suppression under exposure, hairiness and quinque-furcation of rosette leaves as well as elongation and contiguousness of petals, sometimes the result of cross fertilisation. These forms want more study, some of them have been referred to *S. sponhemica* Gmel., others to *rosacea* Moench.

var. *cirrus* mihi provis (near *rosacea* Moench), Buckden Pike, 29/5/10, J.F.P. ! A dwarf, much condensed, globular tufted, very glandulous single flowered Saxifrage of the Hypnoid section.

× *Farreri* Druce (*S. hypnoides* × *tridactylites*), Ingleborough, 1906, R. A. Farrer, *teste* G. C. Druce; Arncliffe Clouders, J.F.P., 31/5/09 ! perhaps not precisely the same thing as Farrer's but a distinct looking Saxifrage, very glandulous, with pinky-tipped petals, leaves substantial and ternate, and blossoming earlier than the type. (Druce would not accept it as his × *Farreri*.)

S. granulata L.

S. tridactylites L.

S. Hirculus L.

Only in North Riding Flora. The report from Sedbergh (J. Handley, *Nat.*, 1903, p. 408) proved to be an error of identification.

S. stellaris L.

Not in East Riding Flora. The Malham Cove record remains unconfirmed. (The Ingleborough, Penyghent and Hinklehaugh (Settle) records also need confirmation, C.A.C.).

S. umbrosa L.

Alien. I cannot now allow the Heseltine Gill plant equal rank with the growths of south-west Ireland. Still it is now ineradicably established and 'At Home.'

S. Geum L.

Alien. Not given in East Riding Flora. Park Gill, Buckden, C.A.C. ! Gill Beck, Bentham, Y.N.U. Ex., *Nat.*, 1935, p. 207.

S. rotundifolia L. and **S. Sibthorpii** Boiss.

Have both occurred as aliens.

Chrysosplenium alternifolium L.

C. oppositifolium L.

Parnassia palustris L.**Ribes Uva-crispa** L. b. **Grossularia** (L.)

A bird sown 'Denizen' in ninety-nine out of its hundred stations, perhaps older in two or three natural stations among the hills where it is contemporary with the woodland in all seeming. In its small currant-fruited form, mentioned by J. G. Baker in North Yorkshire at Flazendale. There is quite a thicket of it (1885) with *R. pubescens* in quantity near it in Grange Gill, Upper Wensleydale, north side. Apparently spontaneous but more likely a reinforcement than a survival.

R. nigrum L. Denizen.

R. rubrum L.

Denizen in the garden form *sativum* Reichb.

R. pubescens Hartm.

Including the briefer, stricter racemed strain *R. spicatum* Robson, which seems to have died out in the Applegarth Hagg where the type remains !

Grange Gill, Wensleydale, thickets of it in a rocky gorge in the Undersett limestone ! Dibscar bottom, J.F.P. ! Does not seem to have been found in any of the Derwent-Rye ravines. Clearly natural and of a distinctly Scotch highland type. Not in the East Riding Flora.

R. alpinum L.

Natural and persisting in its unimproved crag-scrub stations, but a denizen in the East Riding and many of its other stations.

CRASSULACEÆ

Tillæa aquatica L.

Adel dam, R. W. Butcher, Sept., 1921. See *Naturalist*, 1921, p. 369.

Cotyledon Umbilicus-Veneris L.

Not in East Riding Flora and gone from the North Riding, West Witton station.

Sedum purpureum Link (**Telephium** auct.)

var. *Fabaria* (Koch.), Cautley Crags ! Combe Scar, Dent, A.W. ; Dunnow Cliff, Newton-in-Bowland, J.F.P. ! ; Deepdale, Langstrothdale, T.B.W. ; Dibscar and Kilnsey, A.E.B. !

S. roseum (L.) Scop. (**Rhodiola** L.).

Not in East Riding Flora and no recent confirmation from the North Riding.

S. villosum L.

Not in East Riding Flora.

***Sedum anglicum* Huds.**

Not in East Riding Flora. Arncliffe, in a dry stony place sometimes flooded, far from public road and a mile from a house, Rev. W. A. Shuffrey, 1899.

S. dasyphyllum L., *S. album* L., *S. micranthum* Bast., *S. reflexum* L., *S. rupestre* L., *S. Forsterianum* Sm., *S. sexangulare* L. Aliens or Denizens.

***S. acre* L.**

***Sempervivum tectorum* L.** Alien.

DROSERACEÆ

***Drosera rotundifolia* L.**

***D. longifolia* L. and *D. anglica* Huds.**

Both decreasing in Yorkshire as the peat mosses of the Pennines alter and those of the lowland are reclaimed.

var. *sub-caulescens* Melville. The Thorne waste station where this grew in tens of thousands with the two other Sundews and the hybrid *obovata* Merl. et Koch, is now destroyed by fire and the working of the Peat Moss Company.

HALORAGACEÆ

***Hippuris vulgaris* L.**

***Myriophyllum spicatum* L.**

Askern pool, 1831, Hb. Nicholson.

***M. alterniflorum* DC.**

Dale Beck and Austwick Beck, W.W.; Thornton Beck Gill, Dr. W. G. Smith; Hodder, J.F.P.!

***M. verticillatum* L.**

***Callitriche stagnalis* Scop.**

It modifies into *stagnalis* in a drying up matrix, into *obtusangula* in brackish waters, and into the ligulate leaved *intermedia* in deep waters, the lower opposite leaves becoming very narrow indeed in the form *angustifolia* which, the *autumnalis* Hooker, is best seen developed in the fall of the year.

***C. autumnalis* L.**

I believe 'duck-brought' at Malham Tarn. Adventive, in 1902, in the canal at Barnoldswick; this has a junction with the Preston canal where at Ashton-on-Ribble F. C. King got it in plenty in 1882.

LYTHRACEÆ

Peplis Portula L.

Lythrum Salicaria L.

Newton-in-Bowland, J.F.P. !; Helks Wood, Ingleton, *Nat.*, 1888; Lawkland and Austwick Mosses, C.A.C.

L. Graefferi Ten., *L. alatum* Pursh. Garden escapes.

L. Hyssopifolia L. Wool casual.

ONAGRACEÆ

Epilobium angustifolium L.

E. hirsutum L.

The lanuginose *E. villosissimum* Koch is smaller flowered and probably a hybrid. I have only seen it where the hairy *E. parviflorum* was present. \times *E. erroneum* Hausskn. (♀ *hirsutum* \times ♂ *montanum*); Newton-in-Bowland, J.F.P., 1895 ! \times *E. Purvisianum* Mihi. (*montanum* ♀ \times *hirsutum* ♂ pollen), Elmete Hall, 1909, T. Purvis! The pollen carried from some fifty yards away. Leaves, stature and stigma as ♀ flowers, large, erect and rosy as ♂ .

E. parviflorum Schreb.

var. *rivulare* Wahl., is a state, very extreme and glabrous, seen in 1893 by Oak Beck, Harrogate! Shewing no trace of hybridisation, and *E. palustre* with which Druce puts it not within a mile.

E. obscurum Schreb.

\times *E. thuringiacum* (*obscurum* \times *tetragonum*)

King George Dock, Hull; July, 1937 (*teste* G. M. Ash). *Nat.*, 46, 1938.

E. tetragonum L.

Ledston; W.A.S. and G.A.N., 1937. *Nat.*, 309, 1937.

Casual at King George Dock, Hull: July, 1937. *Nat.*, 46, 1938.

[*E. Lamyi* F. Schultz.]

["Not in Flora except in so far as it may be the *E. tetragonum* of Aire and Don in Flora. Dragon Field Estate, Harrogate, in plenty 1893! The Lodge, Meanwood, and new road, Gledhow, 1909, H. E. Craven!" These records surely refer to *E. tetragonum*, W.A.S.]

E. montanum L.

(To be continued)

A NEW BOOK APPERTAINING TO THE ANCIENT
CITY OF YORK

A YORK MISCELLANY

Compiled from records
of the past four centuries

BY

I. P. PRESSLY, M.A.

ILLUSTRATED BY

ELLEN M. McLANE

286 pages, Crown 8vo, with 24 Illustrations in Black and White, and 9 Photographic Plates. Cloth Boards, Gilt Lettering.

6/- NET.

Following much painstaking research work, the author of this book has succeeded in providing a truly kaleidoscopic representation of life in York during the past four centuries. The important part that the City has played in the history of England is clearly shown, and the reader is brought into intimate contact with many famous personages of their times. Altogether, it is an intensely interesting portrayal that should make a strong appeal to young and old alike, and the addition of plates and sketches is a feature that adds considerably to the attractiveness and to the historical value of the book.

Obtainable from all booksellers

A. BROWN & SONS, LIMITED

5 FARRINGDON AVENUE, LONDON, E.C.4

And at HULL

WATKINS & DONCASTER

NATURALISTS,

36, STRAND, LONDON, W.C.2

(Five doors from Charing Cross),

P.O. Box 126.

Telephone: Temple Bar 9451.

Keep in stock every description of

APPARATUS, CABINETS, BOOKS & SPECIMENS

for Collectors of

BIRDS' EGGS, BUTTERFLIES, MOTHS, Etc.

Catalogue (96 pages) sent post free on application.

Issued bi-monthly, Illustrated with Plates and Text Figures.
To Subscribers, 12s. 6d. post free.

The Scottish Naturalist

With which is incorporated 'THE ANNALS OF SCOTTISH NATURAL HISTORY'

EDITED BY

A. C. STEPHEN, D.Sc., F.R.S.E.

Keeper, Natural History Department, Royal Scottish Museum.

AND

PERCY H. GRIMSHAW, I.S.O., F.R.S.E., F.R.E.S.

Formerly Keeper, Natural History Department, Royal Scottish Museum.

Assisted by:—Professor JAMES RITCHIE, M.A., D.Sc., F.R.S.E.; EVELYN V. BAXTER, F.Z.S., H.M.B.O.U.; LEONORA J. RINTOUL, F.Z.S., H.M.B.O.U.; H. S. GLADSTONE, M.A., F.R.S.E., F.Z.S.; C. H. O'DONOGHUE, D.Sc., F.R.S.E.; ANDERSON FERGUSSON, F.R.E.S.; A. R. WATERSTON, B.Sc.

Subscriptions should be addressed to the Publishers,
Messrs. OLIVER & BOYD, LTD., Tweeddale Court, Edinburgh.

COLLECTING APPARATUS.

Nets

Entomological Apparatus

Larva-Cages

Vivaria

Vascula

Plant-Presses, etc.

Pond-Nets

Collecting Tubes

Aquaria

Geologist's Apparatus

Dissecting Instruments

Microscopes, etc.

All requisities for indoor or outdoor work in every branch of
Natural History.

FLATTERS & GARNETT, LTD.,

309 OXFORD ROAD, MANCHESTER.

The Entomologist's Monthly Magazine

PRICE TWO SHILLINGS MONTHLY.

EDITED BY

K. G. BLAIR, B.Sc., F.R.E.S.

R. W. LLOYD, F.R.E.S.

H. G. CHAMPION, M.A., F.R.E.S.

F. LAING, M.A., B.Sc., F.R.E.S.

J. E. COLLIN, F.R.E.S.

H. SCOTT, M.A., Sc.D., F.L.S.

J. J. WALKER, M.A., R.N., F.L.S.

This Magazine, commenced in 1864, contains Standard Articles and Notes on all subjects connected with Entomology, and especially on the Insects of the British Isles.

Subscription—15/- per annum, post free, to—

**NATHANIEL LLOYD & CO., LTD., BURRELL STREET,
LONDON, S.E.1.**

Printed by A. BROWN & SONS, LTD., Perth Street West, Hull, and published by
A. BROWN & SONS, LTD., at 5 Farringdon Avenue, in the City of London.
May, 1938.

The NATURALIST

A MONTHLY
ILLUSTRATED JOURNAL

PRINCIPALLY FOR THE NORTH OF ENGLAND

Edited by

W. H. PEARSALL, D.Sc., F.L.S., and W. R. GRIST, B.Sc.,
The University, Leeds.

with the assistance as referees in special departments of

H. B. Booth, F.Z.S., M.B.O.U.

J. M. Brown, B.Sc., F.R.E.S.

W. H. Burrell, F.L.S.

Chris. A. Cheetham, F.R.E.S.

W. J. Fordham, M.R.C.S., L.R.C.P.,

D.P.H.

Riley Fortune, F.Z.S., F.R.P.S.

Professor A. Gilligan, D.Sc., F.G.S., M.I.M.E.

Mrs. Elsie M. Morehouse.

Thos. Sheppard, M.Sc., F.G.S., F.Z.S.

T. W. Woodhead, Ph.D., M.Sc., F.L.S.

Contents

PAGE

Anglo-Saxon Cemeteries in East Yorkshire,
Part II (*Illustrated*)—T. Sheppard, M.Sc. . . 165-171

A Bryophyte Association in the Millstone Grit—
F. E. Milsom, B.Sc. 171-172

Ornithology of the Liverpool Area, 1937—Eric
Hardy, F.Z.S. 173-178

The Millstone Grit between Knowlwood and
Henshaw Wood, Walsden (*Illustrated*)—
F. Sutcliffe 179-180

The Weight of Rats—A. E. Peck 181

Botanical Notes of the Huddersfield District,
1937—W. E. L. Wattam 181-182

In Memoriam—J. W. Stather, F.G.S.—T. S. . . 182-183

Notes on Seeds and Seedlings—W. E. L. Wattam . 183-184

A Further Contribution to a List of Yorkshire
Siphonaptera—Geo. B. Walsh, B.Sc. . . 185-187

Reviews and Book Notices 184, 187-188

News from the Magazines 180, 188

Illustrations 165, 167, 168, 169, 179

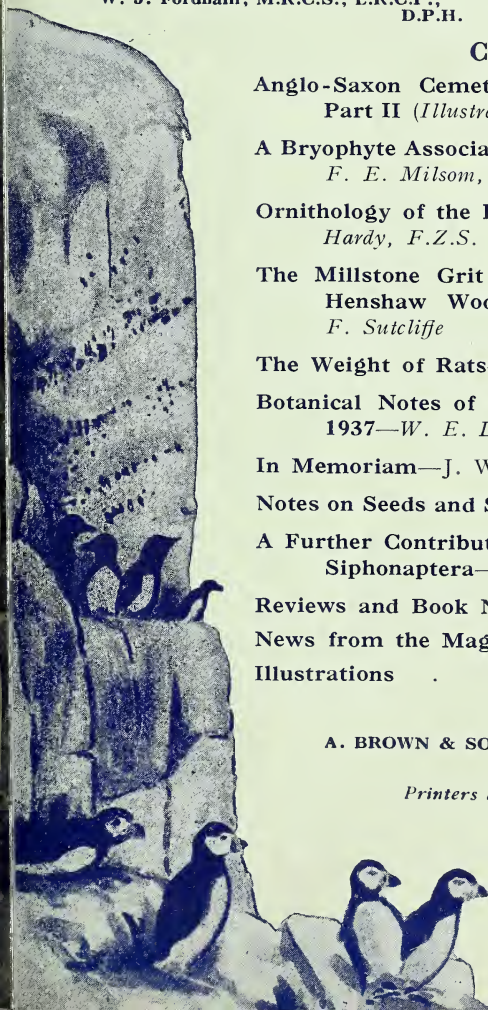
LONDON:

A. BROWN & SONS, Ltd., 5 Farringdon Avenue, E.C.4.
And at Hull.

Printers and Publishers to the Y.N.U.

PRICE 1/6 net.

Prepaid Subscription
15/- per annum.



A new work of prime importance to all interested in
Ornithology

A SPARROW-HAWK'S EYRIE

BY

W. W. NICHOLAS, F.R.P.S.

WITH FOREWORD BY

BRIAN VESEY-FITZGERALD, F.L.S., F.G.S.

NATURALIST EDITOR OF *THE FIELD*

xviii + 75 pages and 17 plates. Crown 4to.

cloth **7'6** net

This book, which is profusely illustrated from photographs taken by the author and his friend, forms the study of a Sparrow-hawk's eyrie from the hatching of the eggs to the flying of the young. In his foreword Mr. Vesey-Fitzgerald says :—" Mr. Nicholas has made a most careful study of the bird and he has in this book added very considerably to the sum total of our knowledge. And more knowledge of such birds as this very beautiful hawk is urgently needed."

OBTAINABLE FROM ALL BOOKSELLERS

*A four-page illustrated pamphlet will be gladly sent by the publishers,
free of charge.*

A. BROWN & SONS, LIMITED

5 FARRINGTON AVENUE, LONDON, E.C.4.

AND AT HULL

ANGLO-SAXON CEMETERIES IN EAST YORKSHIRE

PART II—(continued from page 114)

T. SHEPPARD, M.Sc.

No. 95. This is the upper part of a radiated fibula of a type not previously recorded so far north, though we have a very similar one in our collection from Kent. The Staxton example has a semilunar disc decorated with raised lozenge-shaped pieces formed by punching the bronze with a chisel, and from these are five projections at equal distances. Each of these



projections has been decorated by some jewel, probably a garnet or red glass, but all are missing. There is in each case a distinct circle with a perforation to receive the jewel. There is also a perforation in the centre of the brooch, and behind this are two projecting pieces of bronze to receive the spring of the pin. The total width of the brooch is $1\frac{7}{8}$ ins. from top to bottom, and when complete would probably be $2\frac{1}{2}$ ins. in total length.

Nos. 96, 97, 98. These are three penannular brooches of bronze, of the usual type found in this area. Each is flat, and originally was provided with an iron pin. No. 96 is well made, $1\frac{1}{2}$ ins. in diameter, and still retains the mass of iron

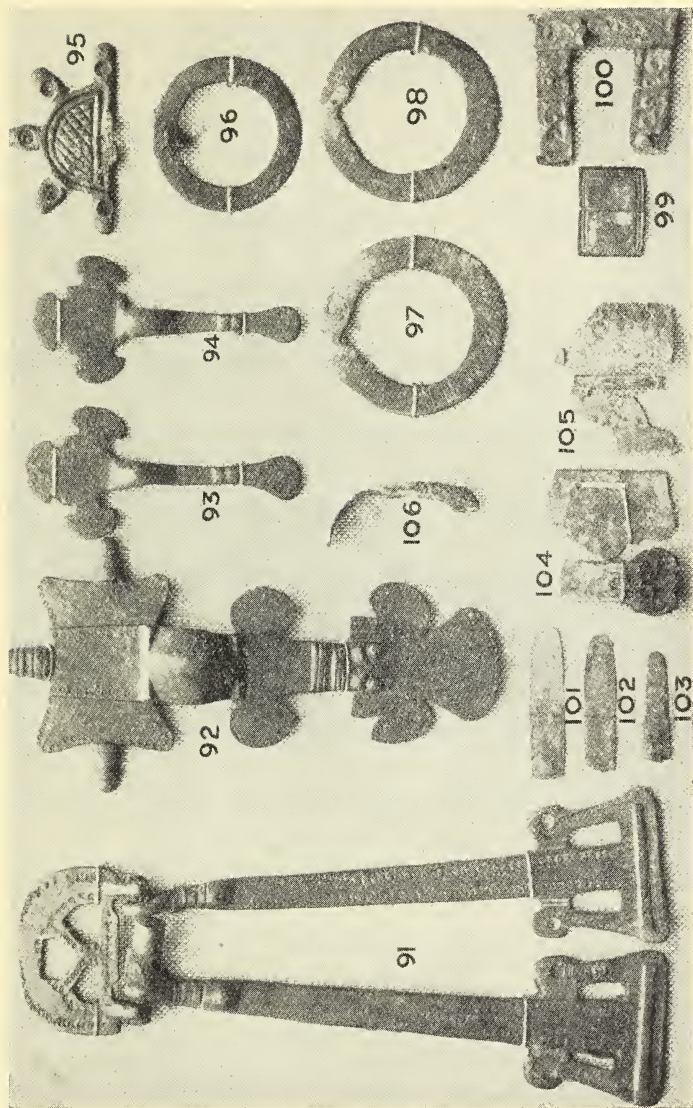
rust representing the end of the pin. In this case the brooch is decorated by a number of very small perforations on the inner edge of the ring. No. 97 is $1\frac{3}{4}$ ins. in diameter, made of a flat piece of bronze $\frac{3}{8}$ in. wide, and one end of the ring has projected $\frac{1}{2}$ in. over the other, where the two pieces were hammered together to receive the end of the iron pin. The decoration consists of a series of four parallel lines, which divide the brooch into four, the intervening space being decorated by oval punctures. No. 98, is similar but more perfect in form, the bronze being slightly narrower. It is constricted at one side to receive the iron pin, and the decoration is almost precisely similar to that of No. 97, suggesting that the two formed a pair.

No. 99. This rectangular piece of metal, silvered, was at first thought to be of later date, probably Georgian, and that it may have occurred with the Saxon ornaments by accident ; in fact this opinion was shared by some friends to whom it was submitted. It has a decorated border containing minute square projections, 20 to the inch. It measures $\frac{7}{8}$ in. by $\frac{5}{8}$ in., is very slightly convex, but has two bronze rivets projecting from the back, each $\frac{1}{8}$ in. in length, precisely similar to those found on other objects in this cemetery, which originally were fastened to leather belts. It just fits in the space within the decorated bronze object, evidently also a strap ornament, referred to below (No. 100). These two, together, show a remarkable resemblance to an object from Highdown, now at Worthing, which measures $1\frac{3}{8}$ ins. by $1\frac{1}{8}$ ins., and has a square bezel, decorated by a piece of red glass surrounded by zoomorphic decorations. This last is evidently a strap decoration, and has four iron rivets, for attachment, at the back. The bronze basis has a thin covering of metal, gilt, the ends of which are turned over at the back, and held in position with the rivets. There is a large oval iron stain on the back probably made by an iron buckle.

Sir Cyril Fox¹ figures a square brooch (Plate XXXIV, Fig. 10), from Haslingfield, which is also similar. Another square object of a like character, but with four rivets, instead of two, as ours, is shown on Plate XXXV, Fig. 1, from Gorton. Sir Cyril, who has examined our specimen, says that the silvered finish, the hand-wrought ornament and the two rivets undoubtedly for attachment to leather, are consistent with Anglo-Saxon date.

No. 100. This decorated piece of bronze seems to have been a strap ornament. The metal is thin, and hammered over, apparently originally holding a thickness of leather. It is $1\frac{1}{2}$ ins. in length and width, and the bronze strip is $\frac{3}{8}$ in. across.

¹ In *Archæology of the Cambridge Region*, Cambridge, 1923.



The decoration consists of a raised pot-hook design. There are remains of four rivets which extend from front to back, and the back part is hammered over and plain, precisely in the same way as the Worthing example already referred to.

Whether the fourth side is lost, or whether the three sides formed the decoration of a strap end, it is difficult to say; but its resemblance to the other example quoted is important, and in my opinion No. 100 is really three-sides of the border for No. 99.

Nos. 101, 102, 103. Among the other objects from this collection are three bronze tabs for leather, very similar to those shown in Figs. 6, 7, and 8. Nos. 101, 102 are the front



and back of the same tab. No. 101 is a front and is decorated by a row of punctures at each side, and has a bronze rivet at the top. Its length is $1\frac{1}{2}$ ins. and $\frac{1}{4}$ in. wide. No. 102 is the plain back piece of bronze for this tab, broken off at the rivet. No. 103 is a similar tab but smaller, 1 in. long, and has a hole at the top for the rivet to attach to the other half, which is missing.

No. 104. This is more substantial, and is a folded piece of bronze, with remains of an iron buckle. This was doubtless the opposite end to one of the straps for which the tabs just described were used. The bronze is $\frac{3}{4}$ in. long and $\frac{3}{8}$ in. wide.

No. 105. A pair of thin bronze belt-clasps, decorated by a pointed tool pressed from behind, leaving a raised decoration. This is very like the pair already illustrated, Fig. 18. Each is just over 1 in. by $\frac{3}{4}$ in.

No. 106. This is a piece of curved bronze which is $1\frac{3}{4}$ ins. in total length, and has a rusted iron mass left at one end.

It is clearly the connecting part of a pair of chatelaines and is probably from the pair shown in Fig. 45.

No. 107. With the first object found was a small necklace of nine graded globular and faceted beads of amber, and one thin bead of blue glass, $\frac{3}{4}$ in. long, and another blue glass bead, with a particularly large hole for threading, $\frac{1}{4}$ in. wide and $\frac{1}{8}$ in. thick. These are similar to those figured as Nos. 11, 13, 14, 43, 69, and 70. The largest amber bead is $\frac{1}{2}$ in. across, and the smallest $\frac{1}{4}$ in. This necklace has been sent to the Scarborough Museum.

No. 108. Among the Scarborough material were some



Anglo-Saxon pottery sherds, which seemed to have no connexion with each other, and which 'did not fit together.' They evidently formed part of the neck and lip of a small globular cinerary urn, though, as far as is known, no calcined bones were noticed. From the same site and at the same time, we secured some pottery fragments, clearly from the same vessel, and though not complete, there is sufficient to make a restoration. It will be seen that the vase was of the size usually associated with the remains of a boy or young woman. It is about $6\frac{1}{2}$ ins. high, $5\frac{1}{2}$ ins. across the top, 7 ins. in greatest width, and has a plain rounded base. It is decorated round the neck and on the shoulder by horizontal and diagonal lines, impressed into the clay before baking, probably with a bone

instrument. There are also some circular punch marks and small impressions made from a square punch-like tool. Its shape and design can be matched almost precisely among the urns from the Anglo-Saxon Cemetery at Sancton, near Hull.¹ While odd pieces of Saxon pottery were found during the excavations (see Fig. 44) this seems to be the only example of a whole urn.

Similarly, among the remarkable collection of Saxon remains at Highdown, already referred to, only one complete urn was recorded² and this was very similar in size, shape, and decoration, to our example. The Sussex example is $5\frac{1}{2}$ ins. in height, 4 ins. across the mouth, and 6 ins. in its widest part.

As the Scarborough Museum is deficient in Saxon pottery, some typical ornamented fragments from this site have also been sent to them.

Three matters have arisen as the result of correspondence with colleagues, since the publication of the first part of these notes.

With regard to the fine brooch, Fig. 30, Mr. E. T. Leeds, in his *Early Anglo-Saxon Art and Archaeology*,³ states 'There remains an ugly type, the earliest specimen of which comes from Kenninghall' and which only otherwise appears south of the Humber, near Leicester. 'This is the type that travels farthest north, occurring at Driffeld, Hornsea, Darlington' and near Tynemouth. With the square-headed brooch there are 'three, and possibly four, varieties originated in the eastern counties, but unlike the cruciform, they spread farther afield to Yorkshire and beyond, the distance from their place of origin being probably the measure of their date.' 'But when we cross the Humber to Londesborough and onwards to Thornbrough and Darlington, it becomes clear that the northern examples must have followed the great road leading to the Wall.'

The second refers to the note on the shell *Cryprea vinosa*, perforated for suspension. Fig. 12 Dr. J. Wilfred Jackson, of the Manchester Museum, tells me that this species does not occur in the Mediterranean,⁴ but is restricted to the Red Sea, which makes this particular discovery all the more interesting.

In *The Journal of Conchology* for August, 1934, Volume 20, No. 2, Dr. Jackson describes a similar shell to ours, found in a Saxon Grave at Camerton in Somerset. The grave is dated as the middle of the seventh century A.D., and contained a female skeleton with the minute bones of a seven months'

¹ See *Hull Museum Publication*, No. 67, Figs. 14 and 22.

² *Archæologia*, Vol. 54. Part II, p. 379.

³ Oxford. 1936.

⁴ This was an error: Mr. J. F. Musham, who identified the species, distinctly referred to its home as the Red Sea.

child within the pelvis. Various small objects were found, including a cowry shell. Dr. Jackson also gives instances of this same species in Saxon Graves in Kent, Bedfordshire, Sussex, and Cambridge.

Nils Åberg, in his book on *The Anglo-Saxons in England*, page 106, remarks that 'Indian decorative shells also occur in Lombard, South German and Scandinavian grave finds, and mostly belong to the seventh century. It would however, seem that these shells had begun to be imported into Middle Europe already during the course of the sixth century.'

Dr. Jackson has also recorded the species from Canton de Samer, Tardingen, and from excavations at Pompeii. In his book on *Shells as Evidence of the Migration of Early Culture*¹ he discussed 'the significance of the presence of cowries in graves and other situations. It was there stated that the cowry was (and still is) widely believed to confer fertility on women and to help in the process of parturition. They are worn by women as amulets, presented to them as bridal offerings in many places, and used by sterile and pregnant women to attain these respective benefits. In addition they have been placed in graves with the object of conferring vitalising power and to ensure the continuance of the deceased's existence, *i.e.* not merely life but resurrection. The association of cowry-shells with pregnancy is to be found in places as far away as India and Japan.'

The third refers to the ox-shoe, Fig. 81. This has been examined by Dr. Gordon Ward, of Sevenoaks. He considers it to be the broken part of a worn horse-shoe, and he thinks that it is not Saxon, but much later; which of course is more than possible.

A BRYOPHYTE ASSOCIATION IN THE MILLSTONE GRIT

F. E. MILSOM, B.Sc.

THE locality, a description of which appears below, was first given to me by Mr. Albert Wilson as the habitat for fruiting *Dicranella squarrosa* in 1934. Since then Mr. C. A. Cheetham and myself have made many visits to the place, which is remarkable for the number of mosses, many of them rare in fruit, which have been found fruiting there. The accumulated observations seem interesting enough to be put on record, as although the locality is in Lancashire (V.C. 60), similar formations occur on the Yorkshire side of the boundary.

¹ *Manchester University Press*, 1917.

Some four miles from High Bentham, on the moorland road leading to Slaidburn, one passes, on the left-hand side, the now derelict Moorcock Inn, and immediately afterwards the road crosses a stream, a tributary of R. Hindburn. A few hundred yards from the road, downstream, on the right-hand bank, one comes to a scree-like formation composed of clay and disintegrated shale, the whole comprising a roughly triangular patch facing north some 60 ft. high and the same distance along the base. It is this scree which is the locality referred to above. The stream is a typical Millstone Grit stream containing submerged *Hypnum ochraceum* var. *flaccidum* and having *Catharinea crispa*, *Polytrichum commune*, etc., growing on the banks. Small boulders, some grit, and a few limestone are embedded in the scree, in which are also a few patches where grass has bound the soil together, giving a somewhat firmer formation in contrast to the crumbling nature of the rest.

Of the mosses the most conspicuous are probably *Discelium nudum* and *Dicranella squarrosa* in fruit, and of the hepatics *Blasia pusilla*. It is worth noting, in connection with the latter, that the flask-shaped gemmæ-receptacles are in best condition about the beginning of November. A full list of all species noted is given below :—

MOSSES.

<i>Catharinea undulata</i> Web. et Mohr.	<i>Bryum pallens</i> Sw. c.fr.
<i>C. crispa</i> James.	<i>B. pseudo-triquetrum</i> Schwaeg. c.fr.
<i>Polytrichum aloides</i> Hedw. c.fr.	<i>Mnium undulatum</i> L.
<i>P. urnigerum</i> L. c.fr.	<i>M. hornum</i> L.
<i>P. piliferum</i> Schreb. c.fr.	<i>M. punctatum</i> L.
<i>P. commune</i> L. c.fr.	<i>M. subglobosum</i> B. & S.
<i>Ditrichum homomallum</i> Hampe c.fr.	<i>Thuidium tamariscinum</i> B. & S.
<i>Dichodontium pellucidum</i> Schp. c.fr.	<i>Brachythecium rutabulum</i> B. & S.
<i>Dicranella heteromalla</i> Schp. c.fr.	<i>Amblystegium filicinum</i> Dr Not.
<i>D. varia</i> Schp. c.fr.	<i>Hypnum commutatum</i> Hedw.
<i>D. squarrosa</i> Schp. c.fr.	<i>H. ochraceum</i> Turn. var. <i>flaccidum</i> Milde.
<i>Fissidens adiantoides</i> Hedw.	<i>H. stramineum</i> Dicks.
<i>Barbula fallax</i> Hedw. c.fr.	<i>H. cuspidatum</i> L.
<i>Discelium nudum</i> Brid. c.fr.	<i>H. Schreberi</i> Willd.
<i>Philonotis fontana</i> Brid. c.fr.	<i>Hylocomium squarrosum</i> B. & S. c.fr.
<i>Webera nutans</i> Hedw. c.fr.	
<i>W. albicans</i> Schp. c.fr.	

HEPATICS.

<i>Aneura pinguis</i> (L.) Dum.	<i>Lophozia ventricosa</i> (Dicks.) Dum.
<i>Pellia epiphylla</i> (L.) Corda.	<i>L. alpestris</i> (Schleich.) Evans c.per.
<i>Blasia pusilla</i> L.	<i>Cephalozia bicuspidata</i> (L.) Dum. c.per.
<i>Alicularia scalaris</i> (Schrader.) Corda.	<i>Calypogeia Trichomanis</i> (L.) Corda.
<i>Aplozia crenulata</i> (Sm.) Dum. c.per.	<i>Diplophyllum albicans</i> (L.) Dum.
<i>A. crenulata</i> var. <i>gracillima</i> (Sm.) Heeg. c.per.	<i>Scapania undulata</i> (L.) Dum.
	<i>S. irrigua</i> (Nees) Dum.

ORNITHOLOGY OF THE LIVERPOOL AREA, 1937

ERIC HARDY, F.Z.S.

THIS is a publication of the Ornithological Section, Liverpool Naturalists' Field Club, which the writer organises, and is intended to help other watchers in the area as well as being a mere summary of records.

ROOK.—In about 15 miles border of Liverpool (Lancashire side only) I noted 17 rookeries with a total of 688 nests this year, largest: Woolton Wood, 242 nests, West Derby, 237. At Aughton, near Ormskirk, Miss N. Medcalf finds the rooks continue to increase and 100 nests were used at Aughton Rectory.

CARRION-CROW.—Although regularly in Wirral in winter, and a few nests as at Stanney Wood, Caldy, etc., it is still scarce South-west Lancashire, but I found one in Knowsley Park, March 27th.

GREY CROW.—I saw two amongst a big crowd of curlew, etc., at Liverpool Sewage Farm during the hard frost, December 18th. They are very rare winter stragglers. Miss S. E. Fraser reported one at Freshfield in December.

MAGPIE.—Covered in the B.T.O. survey. Although only odd pairs of this species nest in the woods generally, according to gamekeepers' abundance, the species literally swarms in the Liverpool parks, Sefton Park, Calderstones, etc., and at Childwall woods on the edge of the city, but just a few miles from the city, at Hale and Speke, is again scarce with but odd pairs. There is no movement except very rarely between the parks, but flocks of ten to twenty sometimes gather in tree-tops at spring and late winter courting.

BRAMBLING.—Mr. W. French told me he first saw them at Liverpool Sewage Farm, December 26th, and Miss Henderson, Secretary of the Field Club, told me they appeared in mid-Wirral with an influx of redwings, December 30th. Although they appear in East Cheshire in October or November, they rarely reach our area until the end of the year. This is curious, because we get our redwings and fieldfares about the same time as East Cheshire.

GOLDFINCH.—Continues to increase its visits; I saw 8, the cocks singing strongly, in Stanley Gorse, Storeton, March 6th, and 2 on the Sefton Meadows, November 21st, while Miss S. Fraser told me she found some at a frequent haunt at Freshfield, March 19th, and Mr. D. Shackleton said he saw some near Meols Station, Wirral, September 19th.

CHAFFINCH.—In the B.T.O. song survey a young cock was in full but subdued song, Childwall Woods early morning, August 25th, the only time I heard it that autumn.

SISKIN.—Miss Henderson reports there were 12 at Thornton Hough, March 13th.

LESSER REDPOLL.—Miss Medcalf reports she found many more nesting at Aughton than ever before ; I found them nesting in Sefton Park, inside Liverpool, for the first time.

TWITE.—Mr. W. French reports two among a flock of chaffinches, Liverpool Sewage Farm, April 17th. We had no previous record there.

TREE-SPARROW.—Increasing with us ; I saw 6 on Childwall House Farm, on the south side of the city, on April 13th, and Mr. W. French drew my attention to numbers varying from 6 to 100 at the Sewage Farm during November and December.

BULLFINCH.—Mr. W. S. Laverock reports two feeding on blackberries in his Wallasey garden, August 20th.

REED-BUNTING.—Mr. W. King drew my attention to these birds playfully tearing up bee-orchids, which were very numerous on the Freshfield bird sanctuary this July.

SNOW-BUNTING.—Miss A. Tunncliffe reports a party at Hoylake, Dee Estuary, in the winter 1936-37 ; this is not a usual haunt.

SKYLARK.—Mr. J. S. Taylor worked out the incubation period on the West Lancashire golf course, near Crosby at 10-12 days, and the fledgling period 9-10 days.

WHITE WAGTAIL.—Miss Henderson reports spring migrants at Burton, April 21st, and Mr. French two autumn migrants at the Sewage Farm, August 22nd.

ROCK-PIBIT.—We saw presumably nesting birds on Hilbre Island, April. In the hard frost, December 18th, I saw 3 amongst swarms of meadow-pipits at the Sewage Farm.

WATER-PIBIT.—Mr. H. G. Alexander recorded one (*British Birds Magazine*) in our area at Parkgate shore, March 21st ; this is our second area record.

MISTLE-THRUSH.—Mr. J. S. Taylor watched birds brooding a second clutch at Crosby while still feeding the first brood.

BLACKBIRD.—In the B.T.O. song survey, the same young cock of the year was singing scraps and sotto-voice in my Wavertree garden on 24 days from August 10th to the end of the year.

FIELDFARE AND REDWING.—More numerous winter 1937-38 than for some years and both species in city parks.

REDSTART.—Miss Henderson reports a migrant cock on Thurstaston Heath, April 20th, and I watched one on Monument Hill, Knowsley Park, August 7th.

BLACK REDSTART.—Miss S. E. Fraser reported one at Freshfield at Easter, 1937.

REDBREAST.—On December 19th I watched a pair courting at Allerton, cock displaying with puffed breast, drooping wings and raised tail—and eventually copulation took place.

STARLING.—I heard from ringing headquarters that a bird recovered near Ormskirk, November 30th, was marked as a young bird, Wittmund, East Friesland, Germany, May 31st, 1937.

GOLDEN ORIOLE.—Mr. P. D. Watkins recorded one (Field) from the Flintshire hills, April 8th, and may have been the same bird one of our members reported to me from Staffordshire the Easter week-end.

SHORT-EARED OWL.—Miss N. Medcalf first saw it, Sefton Meadows, October 7th.

LITTLE OWL.—Slowly spreading over South-west Lancashire. I flushed one at a new locality, Childwall, December 4th.

KINGFISHER.—December 12th, Mr. D. Shackleton saw one fishing the tidal pools, Dee Estuary.

WOOD-PIGEON.—More numerous winter 1936-37 than previous winter. In January I counted 593 flying in to roost in Craven and Dam Woods, Croxteth Park, where I counted 434 roosting the previous winter, and where 172 nested in summer.

GUILLEMOT.—Mr. D. Shackleton saw a young one on Hilbre Island, probably from the North Wales colonies, at the early date of August 7th; they do not nest in the area.

BLACK GUILLEMOT.—A storm-bound bird at Anfield, Liverpool, January 30th.

SANDWICH TERN.—A number with kittiwakes, were on the sandy Freshfield shore in July; I saw them on July 11th, when Mr. A. W. Boyd told me he had just watched them, and again on the 17th; Mr. R. Mawdesly, the keeper, reported none nesting. In fact, I found few terns nesting on the sanctuary proper, most (about 30 pairs) on Southport Corporation property wired in, behind the Lido, at Ainsdale.

BLACK-HEADED GULL.—I found none nesting on the now drier Ainsdale dunes nor at the Sewage Farm, but at Abbott's Moss gull ponds, Delamere, June 6th, I counted 60 occupied nests, although some 300 gulls were congregated there. Mr. J. S. Taylor watched a pair courting on Crosby shore, November 6th.

COMMON GULL.—Migrating flocks appeared in the Childwall golf course, near my home, where I watch daily, on July 2nd.

LESSER BLACK-BACKED GULL.—I saw two newly-arrived, spruce-looking birds of the British variety at the Sewage Farm, March 20th; they remained a fortnight and probably were for the near-by Simonswood moss gullery, where later I counted 58 pairs nesting, and on July 2nd, with the aid of Mr. W. L. French and Mr. H. L. White, marked down 15

nests and found the food remains in their vicinity consisted of 29 hen eggs, 7 duck eggs, 9 pheasant eggs, 3 pheasant chicks, 2 larks, 1 thrush, 1 field vole, 3 brown rats, 2 young rabbits, 20 pellets with egg-shell.

LITTLE GULL.—I saw an immature bird with a crowd of black-headed gulls on the frozen Princes Park Lake, November 29th, and it was again there December 20th.

LAPWING.—Mr. W. French saw a white one in a flock that passed over him at Altcar, November 7th.

OYSTER-CATCHER.—I saw a white one off Hilbre Island, October 24th; it may have been the same bird that has been with the Dee Estuary flocks most winters since 1928.

TURNSTONES.—I counted 70 off Hilbre so late as April 8th.

DUNLIN.—I saw 80-100 in the flooded Sefton Meadows, February 13th; these meadows, whose flood-water was the resort of duck, etc., are now to be ploughed up and no longer flooded for skating. In March I was told of dunlin inland at Winwick, near Warrington.

PURPLE SANDPIPER.—I saw 21 at Hilbre Island so late as April 8th; Mr. D. Shackleton told me he saw his first one last winter on October 31st.

KNOT.—Mr. D. Shackleton reports a solitary immature specimen, Hoylake, July 25th.

CURLEW SANDPIPER.—I saw two by a creek in the Ribble Estuary below Crossens Pumping Station, March 12th, and pointed them out to a small field meeting of the L.N.F.C.

SANDERLING.—I saw a late one, Hilbre, April 8th; about 100 on the Freshfield shore during July, and J. S. Taylor reports one with a buff breast at the Alt Estuary, August 11th.

GREEN SANDPIPER.—I saw one at Liverpool Sewage Farm, July 24th, and W. L. French reports 7 on August 15th.

GREENSHANK.—W. L. French saw three at Liverpool Sewage Farm, January 30th, eight on February 13th, one March 13th; W. H. King saw one at Ainsdale slacks, April 10th; I saw one at the Sewage Farm, July 24th; and W. French saw three September 12th, two October 17th, one October 31st.

REDSHANK.—Increasing nester, new nesting sites: the damp meadows near Ince Blundell and Sefton. J. S. Taylor told me he watched two courting and subsequently mate, Crosby shore, November 6th.

SPOTTED REDSHANK.—I got a very good view of one, through a X30 telescope, feeding with dunlin and ruffs at Liverpool Sewage Farm, October 16th; it stayed about a fortnight, when W. French saw it also.

BLACKTAILED GODWIT.—During winter 1936-37 more

numerous than usual on the coasts : Mr. D. Ward, a Lytham fowler, verifying this from his bags, and Mersey fowlers off the Ship Canal likewise. Mr. D. Shackleton told me he saw his first at Hoylake, September 25th and another October 3rd.

CURLEW.—Four pair nested Simonswood Moss, near Liverpool. There were birds all spring and summer, with the bubbling notes, on Halsall Moss near Southport, but I did not locate a nest ; on Abbott's Moss, in the Delamere part of Cheshire, I heard a bird ' bubbling ' in June.

RUFF.—Mr. W. French and I watched a party of 10 at Liverpool Sewage Farm the last week of March and the first of April ; I saw two again on July 4th, French saw four on September 12th, while at frequent intervals from October to December we saw a party of about 10 birds, many of which may have been the same birds, but once the party reached 11, once 14, and once dropped down to 7, suggesting more likely that there was a fairly constant migration through.

GREY PHALAROPE.—Miss Fraser told me she saw one at Freshfield, March 17th.

MOORHEN.—I saw a white one on the Weaver banks, Acton, November 23rd, feeding with normal birds.

COOT.—Covered in the B.T.O. survey. About nine pairs nest on the big White Man's Dam and four pairs on the Mizzy Dam in Knowsley Park, a few on Eccleston Mere, near St. Helens Wroughtington Hall Lake, and Scarisbrick Hall Lake, odd pairs Childwall Lake and Halstead Colliery Flash ; it has once been reported to me by the farmer at Kirkby Dam, but it does not now nest on Ince Blundell Hall Lake, where Wrigley recorded it in his *Birds of Fromby*. In Wirral, a few nest on Meols railway pond, Thornton Manor Lake, and they have nested at Burton. Doubtful if it has increased this century.

PEREGRINE.—Mr. D. Shackleton told me of a tiercel at Hilbre, August 22nd, and tiercel and falcon, W. Kirby, December 11th ; J. S. Taylor told me of one on the Crosby shore in October, and the following month I was told of a probable one on the Sefton Meadows. The latter meadows, once frequently flooded for skating and the haunt of wild fowl, etc., are now being ploughed for oats, and with the Alt banks strengthened, will not be flooded in future, and thus a loss to bird-watchers.

GREY GEESE.—Rather more numerous winter 1937-38. We had many flights over Liverpool ; Miss N. Medcalf told me of 2,000 feeding in the usual fields at Bescar and Martins Mere in November. Many still on the Ribble banks in March.

MALLARD.—There was the unusual sight of a large flock off the Freshfield shore in October ; Miss Henderson, our

Secretary, saw two ducks sitting on one nest, three eggs each, in Mid-Wirral, April 13th.

GADWALL.—I saw a drake and two ducks, which I flushed, at Knowsley Park, October 16th.

TEAL.—Continues to extend nesting range ; J. S. Taylor told me of a new site, Moss Wood, Little Crosby, on edge of Bootle.

WIGEON.—Mr. W. King reports seeing two feeding on natterjack toads, Ainsdale slacks, April 8th.

POCHARD.—A drake summered on Meols Pond, Wirral ; most winter birds had migrated from Knowsley Park Lake by the end of March, although many mallard, wigeon and teal remained.

TUFTED DUCK.—There was a further increase to 18 nesting pairs in Knowsley Park.

SCAUP.—I saw two inland in Knowsley Park, October 16th.

GOLDEN EYE.—A few winter visitors to W. Kirby Marine Lake (January) and Knowsley Park (February and October).

LONG-TAILED DUCK.—Mr. D. Shackleton saw five drakes in eclipse off Hoylake, September 19th.

SCOTER.—I saw three on the Mersey off Aigburth shore, a few miles up from the mouth, so late as April 14th, and two inland at Knowsley Park, October 2nd.

RED-BREASTED MERGANSER.—We watched one fishing, Hilbre channels, October 24th, and there were odd ones in the Estuary frequently after.

HERON.—At Ince Blundell Moss Woods I found three of the ten nests on the south side in use and one of the two nests on the north side ; at Dam Wood, Scarisbrick, we counted 22 nests, but Mr. Bolter, the keeper, told me only 18 were occupied. Young were being fed chiefly on roach.

CORMORANT.—Continues to increase its freshwater visits as immature in autumn. I saw one on Carr Mill Dam, St. Helens, January 23rd, there were four there October 16th, while one of the four immatures on Knowsley Park Lake, winter 1936-37, remained until June.

GREAT-CRESTED GREBE.—A decline this year ; only one pair nested on White Man's Dam, and none on the Mizzy in Knowsley Park, and none on Eccleston Mere, St. Helens, where they nested 1936.

SLAVONIAN GLEBE.—I saw one Knowsley Park Lake, October 2nd.

N.B.—As usual, my Annual Report of the Liverpool Cathedral Birds' Sanctuary appears in the *Liverpool Review* ; more detailed local notes will be found in the *Proceedings of the Liverpool Naturalists' Field Club*, and my weekly nature notes in the *Liverpool Echo*, Saturday evenings.

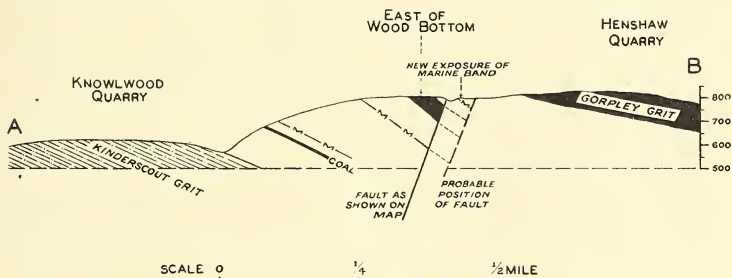
THE MILLSTONE GRIT BETWEEN KNOWLWOOD AND HENSHAW WOOD, WALSDEN

F. SUTCLIFFE

THE district under review is the western part of the area shown on the 6 in. Ordnance Survey map of Lancashire, Sheet 73 S.W. It is between Knowlwood Quarry and the old quarry in Henshaw Wood, Walsden, a distance of about 880 yards.

The area, which exposes part of the Millstone Grit succession, has recently been resurveyed and described by the Geological Survey in 'The Geology of the Rossendale Anticline' by W. B. Wright and others, *Geological Survey Memoir*, 1927.

This paper attempts a small reinterpretation of the structure of the area based on the discovery of a new exposure of



Section from Knowlwood to Henshaw Quarry. The fault is considered to down-throw to the north.' On the published map it is shown with a down-throw to the south.

a marine band. In Knowlwood Quarry the Kinderscout Grit is seen to dip about 20 deg. to the South South-east. A thickness probably about 50 ft. of the Gorpley Grit, is exposed in Henshaw Quarry, where the dip is about the same as in Knowlwood Quarry. About midway between the two quarries east of Wood Bottom is an exposure of the Gorpley Grit.

The dip in this case is in approximately the same direction but is of 25 deg. to 30 deg. A sectional drawing across the three exposures shows the Gorpley Grit of the intermediate section to be in correct relationship, as to thickness of succession, with the Kinderscout Grit. The Gorpley Grit in Henshaw Quarry is about 200 ft. too high above the Kinderscout Grit and must be due to repetition of outcrop. The 6 in. map shows an East-West fault immediately south of the intermediate exposure, accounting for the repetition of the Gorpley Grit outcrop.

A careful search has failed to locate the marine band above the Kinderscout Grit and the one 60 ft. below the Gorpley Grit, but the coal above the Kinderscout Grit was recognised.

A marine band, not recorded on the Geological Survey 6 in. map, has been discovered a little to the south of the fault line shown on the map. It is exposed in many places along a west to east line, from a point about 100 yards north-east of General Wood Farm.

The band consists of about 2 ft. of soft black shale, and in some places the strata are vertical. The shale is very irregular and eroded into lumpy hillocks and appears to be slips; but the marine band shows a remarkable measure of continuity.

The nature of the shale, particularly its tendency to form into concretions like flattened bullions, is very similar to that in the marine band above the Helmsore Grit exposed at Dean Royd, Walsden.

Although the fossils are not very well preserved, they differ considerably from those in the *Reticuloceras reticulatum* mut. β band below the Gorpley Grit. The dominant form is *Reticuloceras reticulatum*, with fairly coarse radial ornament (but finer than *Reticuloceras reticulatum* mut. β), definite spiral ornament on lingua, a ribbed umbilicus and with very plainly marked wheel and inflexional groove. This is recognised as *Reticuloceras reticulatum* early mut. α (*R. metabilingue* Wright). *R. reticulatum* late mut. β also occurs. One specimen of a goniatite was found with smooth rounded ribbing, very coarse at umbilical edge, pronounced lingual swing and distinct spiral markings on lingua.

Posidoniella minor is present along with *Posidonomya* sp. and *Pterinopecten* sp.

The fauna is that of the marine band above the Helmsore Grit, containing *Reticuloceras bilingue* (late forms) and *Reticuloceras metabilingue* Wright and described by Wright, *op. cit.*, p. 40 and 115. It is, therefore, a band above the Gorpley Grit and not, as might be inferred from its position on the 6 in. geological map, below the Gorpley Grit.

There can, therefore, be no fault of importance between the exposure of the marine band and the Gorpley Grit east of Wood Bottom. The evidence seems to show that the fault separating the Gorpley Grit of Wood Bottom from that at Henshaw Quarry lies at least 50 yards further south than the line shown on the 6 in. map.

The writer wishes to thank Dr. R. G. S. Hudson for help in naming the fossils.

NEWS FROM THE MAZAGINES

The Entomologist for April contains 'Two new Genera of Mallophaga,' by T. Clay and Col. R. Meinertzhagen; 'Winter and Spring Butterflies in a Riviera Garden,' by Lt.-Col. N. Eliot; 'The Lepidoptera of Cara Island,' by W. H. Dowdeswell and E. B. Ford; 'The Dragonflies of Byfleet,' by C. O. Hammond; 'The Life-story of *Apatura iris*,' by S. Morris, and several shorter notes and observations.

THE WEIGHT OF RATS

A. E. PECK

(Scarborough)

IN February last I published in the Scarborough press an account of the capture at Hutton Buscel of two rats which each weighed 1 lb. 6½ oz. These were accepted by Mr. W. J. Clarke, F.Z.S., our local Recorder of Zoology, as the heaviest rats of which there is authentic local record.

I am now able to increase this record slightly for on Easter Sunday morning a specimen caught at the same place weighed 1 lb. 7 oz., a second weighed 1 lb. 5¼ oz.

All these big ones were males and all were leading solitary lives in hedge bottoms, the hedges surrounding a poultry farm. I have suggested that there appears to be a fine strain of *Rattus norvegicus* resident at Hutton Buscel.

Previous to the records quoted, Mr. F. Chapman, who has been a ratting enthusiast for fifty years in this district, could only boast a specimen of 1 lb. 4 oz. and this weight also, oddly, was exactly my own record out of many thousands. Then we were jointly responsible for one of identical weight with our personal records.

In *Rats and Mice as Enemies of Mankind*, published by the British Museum (Natural History) which may be read with advantage by anyone affected by these pests, it is stated: 'Weights of adults normally from 14 oz. to 17 oz., but specimens between 20 oz. and 30 oz. have been frequently recorded.' Sceptics may query how frequently the latter figure has been recorded. One frequently hears stories of rats being seen of the size of cats, rabbits, etc. One such described to me by a professional ratcatcher as 'about 2 lbs.' when brought for verification did not scale 1 lb. Its backbone was broken and it was elongated, perhaps by rival dogs, so that it had extraordinary length.

I wonder what the Recorders of Zoology of our Yorkshire Natural History Societies can say on this interesting subject.

BOTANICAL NOTES OF THE HUDDERSFIELD DISTRICT, 1937

W. E. L. WATTAM

Silene anglica L. (English Catchfly). I had several plants appear in my vegetable garden in 1934 and the species has perpetuated itself ever since, being kept under control.

Saponaria vaccaria L. (Cowbane). A large number of plants occurred in late June along the furrows in a turnip field at Newsome, but the attractiveness of the blossoms soon terminated the plants existence.

Thlaspi arvense L. (Penny-cress). A good many plants on garden waste were noted at Newsome in 1936 and 1937.

Datura stramonium L. (Common Thorn-apple). In September last I noted quite a number of this poisonous plant forming a zareba of spiny capsules at the base of a deposit of domestic refuse in a field at Kirkheaton. Possibly the progeny of an escaped garden plant.

Hyocymus niger L. (Common Henbane). Specimens of this also poisonous plant were brought to me for determination in July. They had been found on a refuse tip at Lockwood.

Anchusa arvensis Breb. (Bugloss), *Lithospermum arvense* L. (Gromwell), *Scandix pecten-veneris* L. (Shepherd's Needle), and *Agrostemma githago* L. (Corn-cockle). In early August last many specimens of these plants were noted among the varied flora surrounding cornfields at Cawthorn.

Teucrium chamædrys Benth. (Germander). A fine-grown specimen of this plant, which had sprung up with seed of candytuft in a garden at Newsome, was brought to me for identification in September.

Digitaria sanguinalis (Hairy Finger Grass). Specimens of this alien grass were brought to my notice in August. They had sprung up with radish seed planted in a garden at Newsome.

EARLY BLOSSOMS. A cluster of four flowers of *Tussilago farfara* L. were seen at Kirkheaton on January 9th, 1938. Plants of *Helleborus fatidus* L. in my garden commenced to expand their blossoms on February 14th, 1938.

In Memoriam

J. W. STATHER, F.G.S.

MR. J. W. STATHER, F.G.S., of the firm of John Stather & Sons, wallpaper manufacturers, Hull, died suddenly on the morning of April 14th, in his eighty-second year. While he had not been in robust health for some time, he had been about, and had attended meetings of the various societies in which he was interested, almost to the last moment.

From his early days he took a keen interest in field natural history, particularly geology, and he was one of the founders of the Hull Geological Society fifty years ago, and attended a meeting only a few days since when arrangements were being made to celebrate the Jubilee of the Society. He was a great friend of the late G. W. Lamplugh, one-time amateur geologist of Bridlington, who eventually joined the Geological Survey of Great Britain.

Mr. Stather always specialised in practical field work, and was one of the authorities on the Speeton Clays, a deposit occurring north of Flamborough Headland, which has yielded such wonderful series of beautiful fossils, Mr. Stather's collection being one of the finest of its kind. Besides collecting, Mr. Stather was the author of about forty papers and memoirs dealing

with the geology of East Yorkshire and North Lincolnshire, a number being in conjunction with the present writer. With Lamplugh, Kendall, and others, he was a thorough believer of the Land-Ice origin of the drifts of Eastern England, and many of his contributions to science had a bearing upon that subject. He was the Secretary of the Hull Geological Society from its formation. He was a Fellow of the Geological Society of London, and for many years attended the meetings of the British Association for the Advancement of Science. He was greatly in demand when societies from other parts of the country visited this district, his intimate knowledge of the geology and topography of the area being of great assistance.

In the days when the Yorkshire Erratic Blocks Committee and the Yorkshire Coast Erosion Committee accumulated such a mass of valuable observation, Mr. Stather took a lion's share of the work, as will be seen from the annual reports of the first-named Committee in *The Naturalist* between the years 1886 and 1906, and of the other Committee in *The Naturalist* during the years 1892-1914.

He is a Past President of the Yorkshire Geological Society, and of the Hull Geological Society.

Local geologists will miss his cheery presence very much indeed, as rarely has an indoor meeting or a field excursion been held for many years but Mr. Stather was present and took a prominent part. He was also interested in the Literary and Philosophical Society and the Hull Subscription Library.

He leaves a widow, one son, and two daughters, to whom we extend every sympathy.

T. S.

NOTES ON SEEDS AND SEEDLINGS

W. E. L. WATTAM

Arum maculatum L. (Cuckoo Pint). Berries were collected at Uphill, Somerset, in July, 1935. The seeds were washed from the fleshy covering when the reticulate markings were well disclosed. After drying, the seeds were placed in a glass tube, corked at the end, and so kept until planting. On April 14th, 1936, forty seeds were planted, and the pot placed and kept in a cold greenhouse. On opening the tube on this date a sweet odour, similar to that of aniseed, was emitted. The pot contents were solidly frozen during the severity of the winter period, extending from December 6th, 1936, to the end of January, 1937. Germination commenced on February 10th and finished on March 31st, 1937, the whole of the seeds proving fertile. On emergence of the seedling, the attenuated seed coat is carried on the summit of a brief deep-green stem, this stem evidently functioning for food assimilation. The first

indication of the tuberous rootstock is a small corm-like swelling at the base of this stem. By the end of August the stems had withered, leaving the remains of the seed coat upon the ground. On October 15th, 1937, the contents of the pot were turned out, and the forty small rootstocks were found to have recommenced germination. I replanted the whole in a seed pan and placed it outdoors for further development to be under natural conditions. By March 26th, 1938, each seedling had developed one typical cordate non-hastate leaf.

SEED GERMINATION OF *ANTIRRHINUM MAJUS* (VARs.)

Seeds of selected varieties gathered in October, 1933, were planted in mid-March, 1934, in an unheated greenhouse. The seedlings appeared in fair numbers but their growth was slow and weak. A mishap compelled the sowing of additional seed, gathered in October, 1932. This seed was planted April 7th, 1934. Germination was excellent, the resulting seedlings being distinctly more robust in growth than the seedlings from the 1933 seeds. This observation was confirmed by a friend to whom I gave seeds of 1932 and 1933, which he planted in 1934. Similarly, seeds of 1933 planted in March, 1935, as compared with seeds of 1934 planted same time, and seeds of 1934 planted March, 1936, as compared with seeds of 1935 planted same time, most certainly seem to indicate that a resting period is beneficial. Moreover, the percentage of germination does not appear to be in any way affected, whilst the robustness of the seedlings is pronounced.

REVIEWS AND BOOK NOTICES

Phillips New Biology Wall Charts, a series of 16 coloured charts, designed, drawn and edited by **Rev. R. A. Ellis and A. E. Ellis, M.A., F.L.S.** Mounted on cloth, dissected to fold, or mounted on cloth and varnished, with roller. Double charts (48" × 38"), each 11/6. Single charts (24" × 38"), each 6/3. Judging by the two specimen charts we have seen these should be very useful in Biology lessons leading up to School Certificate, H.S.C., Inter. B.Sc., First M.B., and similar courses. The subjects selected are such as do not readily lend themselves to blackboard illustration. The treatment is bold and distinct, without sacrificing essential details of structures, and the system of contrasting colours employed makes the diagrams clearly visible at a distance. They are fully labelled with an index of lettering on each chart and should be particularly helpful for rapid revision of a type. They are divided into four sections :—(a) Mendelian Heredity, the first of their kind to be produced in this country ; (b) Skeletons ; (c) General Zoology ; (d) Botany.

Beneath the Surface, by **H. E. Towner Coston**. Country Life. 5/- net. This book, one of a series on the Design of Life, deals with life beneath the surface of fresh water. It gives a good general account of the biology of sub-aqueous creatures with special reference to their relation to fish and fishing. It is well written, non-technical and well illustrated. It may be recommended to the angler and the general naturalist in particular.

A FURTHER CONTRIBUTION TO A LIST OF YORKSHIRE SIPHONAPTERA

GEO. B. WALSH, B.Sc.

THE following records add a little more to our knowledge of fleas found in Yorkshire and are supplementary to those given by Mr. H. Britten (*Antea*, p. 72). They are based on notes sent by Mr. J. M. Brown, an old collection of microscopic slides of specimens collected in the Scarborough area by Mr. W. J. Clarke, specimens sent me from Hull by Mr. T. Stainforth and from Helmsley by Mr. A. Gordon, on records in the lists of the Scarborough Field Naturalists' Society made (1913-15) by the Rev. R. A. Taylor, and on specimens collected or bred by the author. In all cases where there has been any doubt, the specimens have been named by Dr. K. Jordan, the late N. C. Rothschild, Mr. Gordon B. Thompson, or the late Dr. J. Waterston.

Fleas are long lived and can live for a long time without food (c.f. G. B. Walsh, 'The Passage of Apterous Insect Parasites from Host to Host,' *Ent. Mo. Mag.*, Vol. LX, 1924, pp. 143-8); hence dates have been omitted as giving little useful information.

The numbers and nomenclature are those given by Mr. Gordon B. Thompson in his 'Revised List of the British Siphonaptera' (*Ent. Mo. Mag.*, Vol. LXXI, 1935, pp. 181-3). There are therefore slight differences from those used by Mr. Britten, which are apparently based on the late N. Charles Rothschild's 'Synopsis of the British Siphonaptera' (*Ent. Mo. Mag.*, Vol. LI, 1915, pp. 49-112).

PULICIDÆ

1. *Xenopsylla cheopis* Rothschild. From rats on board ship, Hull (T.S.).
2. *Pulex irritans* Linne. All too widely distributed, the human flea; a specimen from Helmsley occurred on a cat (A.G.) I have found occasional specimens in hollows on dry sand frequented by day-trippers at Redcar and Saltburn.
3. *Archæopsylla erinacei erinacei* Bouché. Common and widely distributed on the hedgehog, to which species it is peculiar. Thirty-four specimens on one hedgehog (R.A.T.), Ruston, Hilla Green, Scarborough (G.B.W.), Sheffield (J.M.B.).
4. *Ctenocephalus canis* Curtis. On dog, Scarborough (G.B.W.) and Hull (T.S.).
5. *C. felis felis* Bouché. On cat, Scarborough and Hull.
6. *Spilopsyllus cuniculi* Dale. Widely distributed on rabbits and in their burrows in the Scarborough district (G.B.W.).

CERATOPHYLLIDÆ

8. *Ceratophyllus styx* Rothschild. Mr. Taylor notes: A nest of the common dipper (*Cinclus aquaticus*) was brought me by Mr. Arnold Wallis, and from this nest I obtained over 400 specimens

of this flea. Mr. Rothschild informs me that usually this flea has been found in the nests of the sand martin (*Cotile riparia*) and he was specially interested to find it in such numbers in the nest of the dipper. Mr. Wallis assures me that the nest was a considerable distance from any nests of the sand martin.

I have found it in numbers in the damp rubbish in the nests of the sand martin at Hilla Green about a month before the birds had returned in the spring, so that they must have existed without blood since the autumn of the year before (G.B.W.).

10. *C. hirundinis* Curtis. Common in nests of house martin, Scarborough (G.B.W.).
12. *C. farreni* Rothschild. Found with the preceding species (G.B.W.).
14. *C. columbæ* Walckenaer and Gervais. Found on the domestic pigeon and bred from larvæ in their nests, Scarborough (G.B.W.).
17. *C. gallinæ* Schrank. On the domestic fowl, Scarborough (R.A.T. and G.B.W.), Helmsley (A.G.).
18. *C. fringillæ* Walker. Bred from larvæ in deserted nests of skylark, Scarborough (G.B.W.).
19. *Malaræus penicilliger* Grube. On the field mouse and mole, Scarborough (R.A.T.).
20. *Nosopsyllus fasciatus* Bosc. Found with the last species (R.A.T.) together with
22. *Megabothris walkeri* Rothschild.
24. *Monopsyllus sciurorum* Schrank. On red squirrel, Scarborough district (W.J.C.).
26. *Dasyopsyllus gallinulæ* Dale. Scarborough district. Found in the nest of the wren (160 specimens), chaffinch, greenfinch, long-tailed tit, etc. (R.A.T.). Bred from larvæ in nests of song-thrush, missel-thrush, blackbird, robin, etc. (G.B.W.).
27. *Paraceras melis* Walker. In enormous numbers on a young badger found dying by the late E. B. Lotherington at Staintondale. With it were even greater numbers of the louse *Trichodectes melis* (G.B.W.).
28. *Ctenophthalmus agyrtes nobilis* Rothschild. Common in the nests of field-mouse, vole and mole in the Scarborough district (R.A.T.) Moles' nests at Ganton and Brompton (G.B.W.).
29. *C. bisocdentatus* Kolenati. In nests of mole, Scarborough (R.A.T.) Helmsley (A.G.), Ganton (G.B.W.).
31. *Rhadinopsylla pentacanthus* Rothschild. Found in the Scarborough district in nests of mouse, vole and mole (R.A.T.); nests of mole at Brompton, Seamer and Ganton (G.B.W.).

LEPTOPSYLLIDÆ

33. *Palæopsylla sorecis* Dale. On field-mouse, Scarborough (R.A.T.); on water-shrew, Helmsley (A.G.).
34. *P. Kohauti* Dampf. In moles' nests at Ganton, Seamer, Brompton (G.B.W.), Helmsley (A.G.).
35. *P. minor* Dale. Common with the preceding species (G.B.W.).
36. *Leptopsylla segnis* Schönherr. On house-mouse, Scarborough (G.B.W.).

HYSTRICHOPSYLLIDÆ

39. *Hystrichopsylla talpæ* Curtis. Found in the nests of moles wherever I have examined them—Helmsley, Forge Valley, Raincliffe Woods, Brompton, Seamer, Ganton, Bubwith (G.B.W.). Mr. Taylor records it from the nests of field-mouse and vole (R.A.T.), Sheffield (J.M.B.).

ISCHNOPSALLIDÆ

40. *Ischnopsyllus elongatus* Curtis. On noctule bat (*Nyctalus noctula*), Helmsley (A.G.).
44. *I. hexactenus* Kolenati. On Daubenton's bat (*Myotis daubentoni*), Helmsley (A.G.).

Mr. Britten records one species, No. 13, *Ceratophyllus garei*, not recorded above. Thus the Yorkshire list at present stands at 29 species out of a total British list of 46.

The author will be grateful for fleas from any part of the county; the specimens from one host should be put in a single tube containing methylated spirit.

REVIEWS AND BOOK NOTICES

Observer's Book of Trees and Shrubs of the British Isles, compiled by W. J. Stokoe, pp. 240, 177 illustrations, 16 in colour. Warne and Co., Ltd., London. 2/6 net. This is an excellent and portable little volume, containing descriptions and illustrations of the common British trees and shrubs, which will enable the non-botanical to identify them. Details of 106 species are given. Most of the book is a summary and rearrangement from Edward Step's *Wayside and Woodland Trees*. The combination of portability and fulness of information is most creditable and the work may be recommended.

The Critica Botanica of Linnaeus, translated by the late Sir Arthur Hort, xxvii+239 pp. Ray Society, 12/6. Of the many valuable contributions which Linnaeus made to Botany none exceeded in importance his work on nomenclature which culminated in the introduction of the binomial system in place of the confused and chaotic methods previously in use. Though this system was not employed consistently until the publication of the *Species Plantarum* (1753), the way was prepared by the *Critica Botanica* (1737) in which Linnaeus sets forth in detail his views and rules as to the methods which should be followed in the naming of plants; and many of the fundamental principles of our modern International Rules of Nomenclature are foreshadowed in this work. The volume is dedicated to Dillenius, the celebrated Oxford Professor, and in the preface Linnaeus explains the reasons for his attempted reform of nomenclature. There then follow sections devoted to Generic, Specific and Varietal names and Synonyms. These take the form of 125 rules with examples of their working. From these we learn that 'Generic names formed to preserve the memory of a Botanist who has deserved well of the Science I retain as a religious duty.' In the examples under this heading the connections, often rather fanciful and not always complimentary, are traced between various flowers and the botanists after whom they are named. Thus, '*Commelina* has three petals, two of which are showy, while the third is not conspicuous, from the two botanists called Commelin, for the third died before accomplishing anything in Botany.' '*Linnaea* was named by the celebrated Gronovius and is a plant of Lapland, lowly, insignificant, disregarded, flowering but for a brief space, from Linnaeus who resembles it.' '*Dorstenia* whose flowers are not showy, as though they were faded and past their prime, recalls the work of Dorsten.' But names derived from Christian saints and all such as commemorate 'miscellaneous public characters' are banned. He also objects to names which are too long, difficult to pronounce or unpleasant (*Tetrahitis* is an 'unpleasant' name—'uncouth and barbarous') and is scathing on the subject of hybrid names compounded from Greek and Latin and such as are derived

from 'barbarous' languages. If space allowed, one would like to quote many passages from this work which shows with what meticulous care the great naturalist studied every detail of classification and nomenclature and which gives the reader a wonderful insight into Linnaeus' mind. It is by no means a work of purely historical and antiquarian interest. Few present-day botanists would fail to receive instruction from Linnaeus' discourses on the meaning and significance of plant names and few indeed could fail to be diverted by his challenging and outspoken style. This book contains much matter of interest to all intelligent botanists and horticulturists as well as to those more especially interested in nomenclature. The translation by the late Sir Arthur Hort has been revised by Miss M. L. Green, and Sir Arthur Hill supplies the introduction. As the book is a Ray Society publication it need scarcely be added that the appearance and printing are of the best.

Flora of Westmorland, by **Albert Wilson**, pp. 412, 37 illustrations and 1 map in colour. Buncle and Co., Ltd., Arbroath. 25/- net. The publication of this book is something of a botanical event. Not only has its author had a sixty years acquaintance with the district he writes about, but he has already published with J. A. Wheldon, *The Flora of West Lancashire*, which with its detail, its illustrations and its ecological outlook, marked a new era in county floras. Further, Mr. Wilson possesses not only an exhaustive knowledge of flowering plants but also a detailed knowledge of bryophytes and lichens, which is approached by few in this country. The anticipations raised by these facts are not disappointed. This is a notable addition to the natural history of the British Isles. Westmorland is, strictly speaking, a somewhat unnatural division of the country. It is, in the sense now usually employed, the Vice-county 69a, Lancashire north of the sands, making up the rest of the Watsonian Vice-county 69. It is unnatural in the sense that it includes a bit of the Lake District, some of the mountain limestone part of the Pennines and of the Teesdale district. On the other hand, it possesses for the systematist, the compensation of including a great variety of habitats, and hence a great diversity of flora. Because much of the county is mountainous and comparatively inaccessible, it is one of the least well-known parts of England, and the results of life-long acquaintance with its flora are thus especially valuable. Further, records of noteworthy plants in Furness are also indicated. The real test of a flora is in its detail and its completeness. Here time alone will decide. But a detailed knowledge of certain parts of Westmorland leads one to forecast that few omissions will be found and certainly many points new to the reviewer are brought to notice. The numerous photographs are of the highest class and some, such as *Hypnum crista-castrensis* in Glencoyne Wood, are most unusual. In short, the whole volume is a worthy companion to the West Lancashire Flora.

NEWS FROM THE MAGAZINES

The Entomologist's Monthly Magazine for May contains 'Preliminary Notes on the genus *Popilius* Kaup. (Col. Passalidæ) (with diagrams),' by J. R. Dibb; 'On Two New Species of Bromeliadicolous *Copelatus* (Col. Dytiscidæ),' by J. Balfour-Browne; 'A Contribution to the Study of the Palpicornia, I,' by J. Balfour-Browne; 'Birds Seen to Attack the Nymphaline Butterfly *Anaea verticordia luciana* Hall,' by G. D. H. Carpenter; 'The Parasites of British Birds and Mammals, XVIII: The Mammal-Fleas and their Hosts,' by G. B. Thompson; 'A Preliminary List of the Coleoptera of Windsor Forest,' by H. Donisthorpe; and one or two short notes.

A NEW BOOK APPERTAINING TO THE ANCIENT
CITY OF YORK

A YORK MISCELLANY

Compiled from records
of the past four centuries

BY

I. P. PRESSLY, M.A.

ILLUSTRATED BY

ELLEN M. McLANE

286 pages, Crown 8vo, with 24 Illustrations in Black and White, and 9 Photographic Plates. Cloth Boards, Gilt Lettering.

6/- NET.

Following much painstaking research work, the author of this book has succeeded in providing a truly kaleidoscopic representation of life in York during the past four centuries. The important part that the City has played in the history of England is clearly shown, and the reader is brought into intimate contact with many famous personages of their times. Altogether, it is an intensely interesting portrayal that should make a strong appeal to young and old alike, and the addition of plates and sketches is a feature that adds considerably to the attractiveness and to the historical value of the book.

Obtainable from all booksellers

A. BROWN & SONS, LIMITED

5 FARRINGDON AVENUE, LONDON, E.C.4

And at HULL

COLLECTING APPARATUS.

Nets	Vascula	Aquaria
Entomological Apparatus	Plant-Presses, etc.	Geologist's Apparatus
Larva-Cages	Pond-Nets	Dissecting Instruments
Vivaria	Collecting Tubes	Microscopes, etc.

All requisities for indoor or outdoor work in every branch of Natural History.

FLATTERS & GARNETT, LTD., 309 OXFORD ROAD, MANCHESTER.

REVUE DE GÉOLOGIE

et des Sciences Connexes.

Review of Geology and the connected Sciences.	Rundschau für Geologie und verwandte Wissenschaften	Rassegna di Geologia e delle Scienze affini.
--	--	---

Sponsored by the SOCIÉTÉ GÉOLOGIQUE DE BELGIQUE, with the coöperation of the FONDATION UNIVERSITAIRE DE BELGIQUE.

A monthly publication giving abstracts, clear but concise and not controversial, of original papers appearing in many widely distributed publications. Abstracts prepared by well-trained collaborators. Essential to the student reader and the investigator, enabling him to keep closely in touch with the progress and discoveries made over the whole world. Included are not only those in Geology proper, but also in the related sciences thus covering 18 Departments. In this work scientific institutions, geological surveys and many individuals coöperate, thus establishing close relations between the geologists of the whole world.

Secrétariat Général: Institut de Géologie, Université de Liège (Belgique).

Annual subscription price:

35 Belgas, sent to Mr. G. TIBAU, 35 rue des Armuriers, LIÈGE, BELGIUM, also through a bookseller.

WATKINS & DONCASTER NATURALISTS,

36, STRAND, LONDON, W.C.2

(Five doors from Charing Cross),

P.O. Box 126.

Telephone: Temple Bar 9451.

Keep in stock every description of

APPARATUS, CABINETS, BOOKS & SPECIMENS

for Collectors of

BIRDS' EGGS, BUTTERFLIES, MOTHS, Etc.

Catalogue (96 pages) sent post free on application.

NORTH WESTERN NATURALIST

A SCIENTIFIC AND EDUCATIONAL JOURNAL (Published Quarterly), especially for Cheshire, Cumberland, Derbyshire, Isle of Man, Lancashire, North Wales, Shropshire, Staffordshire and Westmorland.

EDITED BY A. A. DALLMAN, A.L.S., F.C.S., in collaboration with

H. BRITTEN, F.R.E.S.

F. J. BROWN, M.Sc.

Rev. G. H. CARPENTER, D.Sc.

W. E. COLLINGE, D.Sc., F.S.A.

R. H. CORSTORPHINE, B.Sc., F.L.S.

R. J. FLINTOFF, F.L.S., F.Z.S., F.C.S.

H. E. FORREST, F.L.S.

J. W. JACKSON, D.Sc., F.G.S.

T. A. JONES.

H. W. MILES, M.Sc., Ph.D.

C. L. WALTON, M.Sc., Ph.D.

F. E. WEISS, D.Sc., F.R.S., LL.D.

A. WILSON, F.L.S., F.R.Met.S.

Communications to:—

Editorial—A. A. Dallman, A.L.S., F.C.S., 12 Tickhill Road, Doncaster.

Business—T. Buncle & Co., Ltd., Market Place, Arbroath.

Annual Subscription, 7/6. Single copies, 2/- net.

Printed by A. BROWN & SONS, LTD., Perth Street West, Hull, and published by A. BROWN & SONS, LTD., at 5 Farringdon Avenue, in the City of London.

The NATURALIST

A MONTHLY
ILLUSTRATED JOURNAL

PRINCIPALLY FOR THE NORTH OF ENGLAND

Edited by

V. H. PEARSALL, D.Sc., F.L.S., and W. R. GRIST, B.Sc.,
The University, Leeds.

with the assistance as referees in special departments of

H. B. Booth, F.Z.S., M.B.O.U.

J. M. Brown, B.Sc., F.R.E.S.

W. H. Burrell, F.L.S.

Chris. A. Cheetham, F.R.E.S.

W. J. Fordham, M.R.C.S., L.R.C.P.,

D.P.H.

Riley Fortune, F.Z.S., F.R.P.S.

Professor A. Gilligan, D.Sc., F.G.S., M.I.M.E.

Mrs. Elsie M. Morehouse.

Thos. Sheppard, M.Sc., F.G.S., F.Z.S.

T. W. Woodhead, Ph.D., M.Sc., F.L.S.

Contents

PAGE

The Fruiting of <i>Climacium denroides</i> W. and M. (illustrated)—T. H. B. Bedford	189-195
Field Notes	195
Centenary of a Yorkshire Society	196
Some Collembola in Winter—James M. Brown, B.Sc., F.R.E.S.	197-198
The Ants of Whitby and District, 1937—H. Britten	199-200
An Electric Ray at Scarborough—W. J. Clarke	200
Entomology around Robin Hood's Bay—James M. Brown, B.Sc., F.R.E.S.	201-206
Elf-Darts (illustrated)—T. Sheppard, M.Sc., F.G.S.	207-208
Records	208-209
The Harrison-Hutton Collection of British Land and Freshwater Mollusca—Elsie M. Morehouse	210
Reviews and Book Notices	210-211
News from the Magazines	196, 211-212
The Vegetation of Yorkshire and Supplement to the Floras of the County—(the late) Dr. F. A. Lees—Edited by C. A. Cheetham	213-220
Illustrations	189, 207

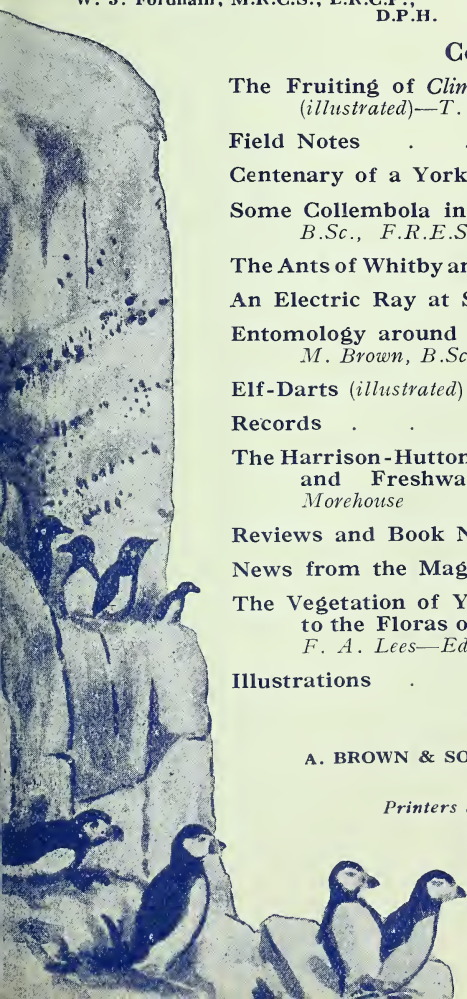
LONDON :

A. BROWN & SONS, Ltd., 5 Farringdon Avenue, E.C.4,
And at Hull.

Printers and Publishers to the Y.N.U.

PRICE 1/6 net.

Prepaid Subscription
15/- per annum.



YORKSHIRE NATURALISTS' UNION

CONCHOLOGICAL SECTION

THE July Excursion will be held at Micklefield for the investigation of Newthorpe Quarries. Members will meet at Micklefield Station at 3 p.m. to 3-15 p.m. on Saturday, July 9th.

This will be a joint meeting with the Leeds Co-operative Field Naturalists' Club, the Yorkshire Conchological Society, and the York and District Field Naturalists' Society. Refreshments should be brought as there are no facilities for tea near at hand. Mrs. Aston will be the leader.

E. DEARING, *Hon. Secretary.*

WATKINS & DONCASTER

NATURALISTS,

36, STRAND, LONDON, W.C.2

(Five doors from Charing Cross),

P.O. Box 126.

Telephone : Temple Bar 9451.

Keep in stock every description of

APPARATUS, CABINETS, BOOKS & SPECIMENS

for Collectors of

BIRDS' EGGS, BUTTERFLIES, MOTHS, Etc.

Catalogue (96 pages) sent post free on application.

The Entomologist's Monthly Magazine

PRICE TWO SHILLINGS MONTHLY.

EDITED BY

K. G. BLAIR, B.Sc., F.R.E.S.

R. W. LLOYD, F.R.E.S.

H. G. CHAMPION, M.A., F.R.E.S.

F. LAING, M.A., B.Sc., F.R.E.S.

J. E. COLLIN, F.R.E.S.

H. SCOTT, M.A., Sc.D., F.L.S.

J. J. WALKER, M.A., R.N., F.L.S.

This Magazine, commenced in 1864, contains Standard Articles and Notes on all subjects connected with Entomology, and especially on the Insects of the British Isles.

Subscription—15/- per annum, post free, to—

**NATHANIEL LLOYD & CO., LTD., BURRELL STREET,
LONDON, S.E.1.**

COLLECTING APPARATUS.

Nets

Entomological Apparatus

Larva-Cages

Vivaria

Vascula

Plant-Presses, etc.

Pond-Nets

Collecting Tubes

Aquaria

Geologist's Apparatus

Dissecting Instruments

Microscopes, etc.

All requisities for indoor or outdoor work in every branch of Natural History.

FLATTERS & GARNETT, LTD.,

309 OXFORD ROAD, MANCHESTER.

THE FRUITING OF *CLIMACIUM DENDROIDES* W. and M.

T. H. B. BEDFORD

(Member of the Northern Ecological Association)

IN 1937 the writer¹ reported *Climacium dendroides* and *Tetraphis pellucida* in fruit at the north-west of Malham Tarn, V.C. 64. Attention was drawn to the rarity with which these two mosses, especially *Climacium*, are reported in fruit, and it



Fruiting specimen of *Climacium dendroides* W. and M. from a wet meadow near Malham Tarn. This plant which was photographed after drying and pressing, possesses forty-two setas. The scale represents one inch.

was suggested that it would be interesting to observe whether they continued to fruit in future years.

In January, 1938, the writer revisited the area in which the mosses were found with fruit. *Tetraphis* was observed fruiting abundantly and presented a remarkable appearance. As regards the *Climacium*, fruiting plants were seen in all the localities in which they were observed last year. They were not fruiting so freely, however, and the individual plants

appeared rather starved and somewhat battered. Many capsules had been lost although still unripe.

Three new stations for *Climacium* in the fruiting condition have recently been found by the writer.

On February 12th, 1938, it was found fruiting in a flat marshy meadow directly north of Blades Farm at Lunds, in Upper Wensley Dale, V.C. 65. The locality has an altitude of 1,050 feet O.D. The meadow lies near the Yore and is subjected to flooding. The *Climacium* was growing among sedge. The soil was very soft and deep and a staff readily passed down to a depth of over a yard. A third of a mile to the east and 200 feet above this station, a stream runs down the fell side following a diagonal course and forms what is possibly the 'High Dike,' which gives its name to the farm situated above. This little stream presented obvious signs of frequent flooding. In the area subjected to flooding, *Climacium* was again observed fruiting freely. The soil conditions here resembled those in the last situation.

On February 26th, *Climacium* was found fruiting on a wet slope on the left bank of Penny Farm Gill, West Baugh Fell, V.C. 65. This station has an altitude of 800 feet O.D. Here again the moss was growing among sedge and the soil was very soft and deep; a staff passed down a considerable distance without encountering resistance. The fruiting specimens obtained here were particularly fine.

Climacium was found fruiting on March 19th in the marshy hollow which lies directly east of Moor Rigg Farm, Grisdale, V.C. 65. This locality has an altitude of 1,200 feet O.D. Only one plant, however, was discovered with fruit. Near it *Hylocomium squarrosus* B. and S. was fruiting. Sedge was also growing in the locality and the soil conditions appeared identical with those in the other stations.

The discovery of *Climacium* with fruit in four stations is of considerable interest. This moss does not appear to have been reported in fruit from Mid-West Yorkshire, V.C. 64, before its discovery at Malham Tarn in 1937. Similarly, it has been impossible to trace a previous record or herbarium specimen from North-West Yorkshire, V.C. 65. One record has been traced for South-West Yorkshire, V.C. 63. Spruce's collection in the herbarium at Manchester University contains two specimens from Stansfield Moor near Todmorden; one was collected in 1838 by Barker, and the other in 1845 by Nowell. Three stations have been traced for North-East Yorkshire, V.C. 62; Terrington Car (Spruce, 1842; Ibbotson, 1843; Bailey, 1859); Codhill Slack, Guisborough (Barnes, 1867 and 1887); Hackness (Ibbotson, no date given). Two stations have been traced for South-East Yorkshire, V.C. 61. Marshall² records the moss in fruit at Goodmanham, near Market

Weigh-ton, in his list of mosses published in Robinson's *Flora of the East Riding of Yorkshire*, which appeared in 1902. I am informed by Mr. Burrell that a specimen of *Climacium* with fruit gathered by Marshall at Driffield in September, 1912, is contained in Ingham's Collection at the Leeds University.

Some idea of the apparent rarity of the fruiting of this common moss can be gathered if we remember that both Spruce and Barnes seem to have found it with fruit only in one station. It is improbable that either Lees³ or West ever discovered it. Lees would almost certainly have recorded the find in his *Flora of the West Riding*, and West's collection in the herbarium at the Manchester University contains no specimen with fruit collected by himself. Wheldon and Wilson⁴ who were both very active workers, failed to find it in West Lancashire. Wilson⁵ and Dixon⁶ for the British Isles, Husnot⁷ for France, and Limpricht⁸ for Germany, Austria and Switzerland, all agree that the fruit is rare.

Now that *Climacium* with fruit is available for study in four stations, it is perhaps permissible to review the factors which may possibly be responsible for this unusual occurrence. It will be realised that in the present state of our knowledge the following remarks must be mainly speculative.

(1) A GENERAL FACTOR

It is conceivable that the *Climacium* in these four stations is fruiting as a result of some influence which is temporarily affecting the moss over a vast area. In other words, fruiting is a rare occurrence and is caused by an exceptional combination of circumstances. This view does not appear to be justified by the evidence. The plants at Malham Tarn, for example, have now been observed in fruit for two consecutive seasons. The large herbarium at the Manchester University contains a number of specimens with fruit collected from the same station. The gatherings were often made at intervals of several years. A study of these specimens seems to suggest that the moss probably continues to fruit for long periods in a particular locality. The absence of later gatherings may be due either to lack of knowledge of the precise site or to gross changes due to drainage, etc. Both Terrington Car, in Yorkshire, and Knutsford Moor, in Cheshire, where *Climacium* once fruited freely—as indicated by herbarium specimens—have since been seriously affected by drainage. The evidence would appear, therefore, to favour the view that the production of fruit is dependent on some local factor.

(2) ALTITUDE

The Penny Farm Gill station has an altitude of 800 feet O.D. The remaining three stations have an altitude of over

1,000 feet. Spruce's station at Terrington Car, however, has an altitude of only 250 feet, Marshall's station at Goodmanham of 200 feet, and Wild's station at Knutsford Moor of slightly under 200 feet. It is evident, therefore, that high altitude is not an essential factor.

(3) RAINFALL

The average rainfall for Sedbergh is 56.1 inches and that for Hawes Junction 70.8 inches. These are the nearest stations from which records are available to Penny Farm Gill and to Lunds and Grisdale respectively. The Meteorological Office, in a private communication, gives the average rainfall for Malham Tarn as 57.4 inches. All four stations are, therefore, situated in an area of relatively heavy rainfall. On the other hand, the average rainfall for Terrington Car is 30.12 inches. Driffield, where Marshall found the moss with fruit in 1912, has an average rainfall of only 27.2 inches. It is improbable, therefore, that fruiting is determined by the average local rainfall.

(4) ROBUSTNESS OF GROWTH

It may be thought that *Climacium* is most likely to be found fruiting in those situations where it grows most luxuriantly. A study of the plants from the four stations suggests, however, that this is not the case. In size and abundance of foliage both fruiting and non-fruiting plants were usually below the average. This is also borne out by an examination of herbarium specimens. Fine, well-grown plants such as the one indicated in the photograph are occasionally encountered, but this would appear to be the exception.

(5) MOSS ASSOCIATIONS

Hylocomium squarrosus B. and S. and *Hypnum cuspidatum* L. were the mosses most commonly observed with the fruiting *Climacium*. *Hylocomium splendens* B. and S. was also frequent, and to a less extent *Thuidium tamariscinum* B. and S. It was particularly noticed that *Climacium* was not found in areas colonised by *Sphagnum* or by *Polytrichum*. In all four stations, however, one received the impression that the mosses generally were displaying a greater tendency to fruit than elsewhere. At Malham Tarn, *Tetraphis pellucida*, as already mentioned, was fruiting abundantly within a few yards of *Climacium*. Similarly, *Hylocomium squarrosus* was observed to be fruiting abundantly about half a mile from the Penny Farm Gill station. Although on rare occasions an occasional fruit may be seen, it is most unusual to find this moss fruiting freely with a massing of setas such as was observed in this instance.

Hylocomium squarrosum was again observed fruiting, but not so abundantly, within a yard of the fruiting *Climacium* at the Grisdale station. One is tempted to conclude that a common local factor was responsible for the fruiting in each instance. The subject seems worthy of further study. The writer has recently been counting the number of species of mosses in a measured area and noting the number bearing fruit. The procedure is then repeated in another locality and the percentage of fruiting species compared. Although this may seem a comparatively simple undertaking, unexpected difficulties arise in the field. Nevertheless, it is hoped in due course to obtain data of value.

(6) SOIL CONDITIONS

All four stations lie in close relation to the carboniferous limestone. With the single exception of Barker's station at Stansfield Moor, all the remaining Yorkshire stations for the moss with fruit are situated in regions where either chalk or limestone is to be found. The precise site of Barker's station is now unknown. No limestone is indicated on the Geological Survey Map (one inch to the mile) of the Todmorden area. Nevertheless, it must be remembered that calcareous springs are relatively frequent even on the gritstone series.

No attempt has yet been made to determine the hydrogen ion concentration in the soil in any of the four stations. It was felt that random estimations would be of little use and that to be of value readings should be taken at frequent and regular intervals throughout the year. According to Sledge⁹ the water at Malham Tarn is moderately calcareous. A sample of mud from the bottom in the middle of the lake was found by him to have a pH value of 7.6, but in spite of a rich calcium carbonate content it was deficient in bases when tested with ammonium thiocyanate. In one site at Malham Tarn, *Climacium* is fruiting at the very foot of the bog. Even here, however, the plants were covered for varying periods during the winter months by the calcareous waters of the lake.

It is to be regretted that De Valera¹⁰ in a recent study of the relation of the growth of mosses to soil acidity presents no data regarding *Climacium* or the associated mosses.

Attention has already been drawn to the fact that the fruiting plants in the four stations were growing in a wet habitat which was liable to frequent flooding. The water table was almost certainly high during all seasons of the year. In three of the stations the plants were growing among sedge. The soil consisted of fine black mud of considerable depth and was probably formed by a process of repeated warping. The finest fruiting specimens were obtained from a wet meadow near Malham Tarn. It was noticed at the time of discovery

that every blade of grass in the region was coated with a layer of fine black mud, the result of a recent inundation.

Climacium seems capable of existing under diverse conditions. It is frequently found growing at the foot of walls where the soil is often very shallow. It may be encountered on relatively dry banks and the writer has observed it growing in clefts on detached blocks of limestone. A study of the conditions in the four stations would seem to indicate that the fruit is not likely to be discovered in any of these habitats. It is suggested that a search for *Climacium* during the winter months in habitats similar to those in the four stations here recorded may reveal the plant to be more commonly in fruit than the previous records would appear to indicate. The writer does not desire, however, to imply that fruit bearing is determined entirely by the soil conditions here described; there are certainly other factors. This was clearly indicated by the absence of plants with fruit from a number of colonies in habitats which appeared identical with those in the four stations under discussion.

To sum up, it would appear that the fruiting of *Climacium* is dependent on some local factor. It has not been possible so far to determine its precise nature, but the soil conditions indicated are probably of considerable importance.

The writer wishes to express his indebtedness to Mr. W. H. Burrell for his kind assistance with the literature.

NOTE.—On March 26th, 1938, shortly after the completion of this paper, the writer was able to study *Climacium* on the left bank of the River Rawthey in Uldale, V.C. 65. A colony of the moss was discovered just below Uldale House (1,000 feet O.D.). The habitat appeared perfect and identical in all respects with that in the stations where the moss had previously been discovered in fruit. Not a single plant, however, was observed to be fruiting. No explanation seemed apparent. A number of plants were carefully scrutinised with a hand lens in the hope of detecting the remains of setas or possibly of perichæatial bracts. It was then discovered that nearly all the plants were bearing numerous flowers. A representative gathering was made from different parts of the colony. The male and female flowers of *Climacium* occur only on separate plants; the inflorescence is dioecious. When the plants from this colony came to be examined with the microscope they were found without exception to be male. The antheridia were fully developed. This discovery would appear to be of considerable importance. A possible explanation is at once provided for the absence of fruit from colonies which appeared to be growing in an ideal habitat; the entire colonies may have been of male plants. A study of the sea distribution in colonies of

Climacium may yield data of considerable interest. It is also desirable to obtain information regarding the manner in which fertilisation is normally effected and the relative importance of asexual reproduction.

REFERENCES

- ¹ Bedford, T. H. B., *The Naturalist*, p. 145, No. 965, 1937.
- ² Marshall, J. J., 'List of Mosses of the Riding,' appendix to *The Flora of the East Riding*, Robinson, J. F., London, 1902.
- ³ Lees, F. A., *The Flora of West Yorkshire*, London, 1888.
- ⁴ Wheldon, J. A., and Wilson, A., *The Flora of West Lancashire*, Eastbourne, 1907.
- ⁵ Wilson, W., *Bryologica Britannica*, London, 1855.
- ⁶ Dixon, H. N., *The Student's Handbook of British Mosses*, Eastbourne, 1924.
- ⁷ Husnot, T., *Muscologia Gallica*, Paris, 1884-1890.
- ⁸ Limpricht, K. G., 'Die Laubmoose Deutschlands Oesterreichs und der Schweiz' in Rabenhorst's *Kryptogamen Flora*, Leipzig, 1890.
- ⁹ Sledge, W. A., *The Naturalist*, p. 217, No. 957, 1936.
- ¹⁰ De Valera, M., *Ibid.*, p. 189, No. 967, 1937.

 FIELD NOTES

Goosander on River Yore.—Last winter I recorded that a certain stretch of the River Yore was the winter habitat of a solitary Great Crested Grebe. During the present season no Grebe has been seen there, but the same length of river has been tenanted by two female Goosander. I have had them under observation on several occasions. They were very timid and rarely came near the river banks. A number of Coots have also taken up residence here. I have not previously noted them in the vicinity.—J. P. UTLEY.

Semmerwater, February 27th.—The following bird life was noted on the lake during the afternoon of the above date when a strong westerly gale was blowing:—12 Whooper Swan, fine birds too, who were accompanied by a flight of 30-40 Widgeon. On the sandy promontory jutting into the lake were six Herons standing in line most statuesque. Wading about the water edge on the same spen were nine Oyster Catchers. I learnt later that one Oyster Catcher had been accidentally shot a few days earlier. In the sheltered waters at the western end were four Great Crested Grebe. Mallard were in large numbers but uncountable owing to the choppy state of the water. Teal were also plentiful, as were Moorhen, Coot and Dabchick. There were plenty of Herring and Black Headed Gulls about the lake. Mr. Outhwaite, of Carr End, said it was a late date for the Swans to be about.—J. P. UTLEY.

CENTENARY OF A YORKSHIRE SOCIETY

IN 1838 the first meeting took place at Wakefield of a Scientific Society, the direct descendant of which, the Yorkshire Geological Society, is officially celebrating its one-hundredth birthday this month. Originally a society for the particular study of the Yorkshire coalfield and of the industries which are dependent on that coalfield, it has during its lifetime become more purely geological in outlook and much less parochial than its parent West Riding Society.

Through the work of its members, individually and collectively, it has made important contributions to science which have appeared in its *Proceedings*. Noteworthy among these are the geological sections of the coalfield made by the Rev. Wm. Thorp, some the earliest studies of sedimentary rocks by Dr. H. Clifton Sorby, excavations into prehistoric caves and barrows and the large-scale study of the underground waters of the mountain limestone. In recent years the study of the carboniferous rocks and their fossils has taken the place of an intense examination of the problems of glacial geology which occupied the attention of the society at the turn of the century.

The Yorkshire Geological Society has always worked in close harmony with the Yorkshire Naturalists' Union and the names of distinguished amateur geologists, such as Davis, Cash, Culpin, Holgate and Stather are honoured in both societies. Like the Naturalists' Union, the Geological Society has covered the whole of the county in its studies, but in view of the impossibility of solving many of the problems of the county by purely internal observation frequent excursions have been made outside the county as far afield as Scotland and East Anglia. At present the society has nearly 200 members of which about one quarter live outside the county. This large and increasing number includes, in addition to those professionally connected with the science, a large number drawn from allied sciences as well as those whose membership is a result of a keen interest in the subject and a love of the countryside.

The progress of the society in its first hundred years is shown in part by its *Proceedings*, but the printed word cannot properly convey the co-operation and good fellowship which permeates all geological societies which work in the field, and it is to these qualities, along with a desire for the further study of our county, that Yorkshire geologists look for a second century.

The Entomologist for June contains 'Edward Meyrick, B.A., F.R.S.,' by W. H. T. Tams (with photograph); 'Observations on the Generic Nomenclature of some British Agrotidæ,' by W. H. T. Tams; 'A Further List of Hybrid Bistoninæ,' by J. W. H. Harrison; 'The Life Story of *Apatura iris*,' by S. Morris; 'The International Code of Zoological Nomenclature,' by B. C. S. Warren; and several notes and observations.

SOME COLLEMBOLA IN WINTER

JAMES M. BROWN, B.Sc., F.R.E.S.

LOG-TURNING and stone-turning in the woods, especially in winter time when other means of collecting are less effective, afford considerable interest, and are productive of a surprisingly large amount of material, especially of the smaller forms of life. Among insects, Springtails or Collembola are almost certain to be obtained, and although these small and apparently insignificant creatures are to be found almost everywhere, and at all times, quite a fair number intrude themselves most during the winter, and are active even in frosty and snowy weather. Some species I find at this season and not at other times, while some other species seem to be most numerous in winter.

Perhaps the most obtrusive—if such small insects can be correctly said to be obtrusive—is the yellowish-white ‘springless’ springtail, *Onychiurus armatus* Tullb., which occurs under logs and among dead leaves in enormous numbers during December, January, February, and later. Although blind, owing to the absence of eyes, it is highly sensitive, being very well provided with a number of quite extraordinary sense-organs of doubtful function, in the form of postantennal organs, pseudocelli, and hairs and outgrowths of various forms on the antennal segments. This species, which reaches a length of 2.5 mm., is a lowly member of this lowly group of insects, with a reduced type of ‘ventral tube,’ and as mentioned above, being without the characteristic ‘spring’ is dependent entirely on its powers of walking for locomotion. Even so, it is decidedly active and seems to be almost continually on the move, and is able to get along much faster than one would expect judging from the shortness of its legs in comparison with the length of its body. Taking the average of a number of trials, I find it can travel between nine and ten yards per hour, which means about one mile per week.

More attractive and more active is the iridescent, scale-covered, shining, silvery-blue springtail, *Lepidocyrtus lanuginosus* (Gmel.), with highly-developed powers of leaping owing to its prominent spring. This species is frequently found in large numbers, often with its dark-violet relative, *L. cyaneus* Tullb. even in frosty weather. Unlike *Onychiurus* it is provided with the usual complement of eight simple ‘eyes’ or ommatidia, grouped on either side of the head, and to balance matters, it is without some of the complicated sense-organs of that, species.

More striking still is the remarkably-coloured *Dicyrtomina minuta* var. *ornata* Nic. This species belongs to the group of more highly organised Springtails, with squat body having the

segment-boundaries almost lost through fusion of the abdominal segments, the full complement of simple eyes, extraordinarily long glandular filaments extrusible from the ventral tube, a highly developed and very efficient spring, and long antennæ. The upper surface of the body, especially of the abdomen, is marked in quaint hieroglyphics in bright and varied colours, making the insect a very beautiful object when seen under the lens. It occurs during January and the following months in plenty under logs, and is absent, or much less numerous, at other seasons. Although only 1.75 mm. in length, it is able to leap over 100 mm., or about sixty times its own length.

A larger but less ornate species is *Tomocerus minor* Lubbock, found in all stages of growth at this season under logs and bark. Scale-covered like *Lepidocyrtus*, it is more sombre and dull, the whole body being overlaid by leaden-coloured or bluish-black scales, and becoming yellowish when these are rubbed off, which easily happens. Frequently during damp and frosty weather, the body hairs carry so many minute droplets of moisture that the whole insect appears to be enveloped in hoar frost. The prominent spring is provided with a curious armature of tridentate spines on the basal segments, the function of which is not easy to understand.

It has previously been pointed out that while Collembola may occur in very large numbers in any situation, vast hordes, numbering many thousands of individuals, are occasionally seen (*The Naturalist*, 1921, p. 129, and 1936, p. 252). This applies, among others, to *Sminthurinus aureus* var. *ochropus* Reut., which I have sometimes observed towards the end of the year in such enormous numbers that one cannot wonder that Springtails, though of such small size individually, have the capacity of doing considerable damage to plant structures, principally perhaps by abrading the surface epidermis and allowing the entrance of, or perhaps even introducing, spores of destructive fungi.

The following are among the more obvious species of Collembola which I regularly observe during the winter season without much searching, among dead leaves and under logs and stones in Ecclesall Woods, Sheffield. Other species, less noticeable, can be found by closer and more careful search.

Onychiurus armatus Tullb. and
var. *denticulata* Handsch.
Achorutes (*Neamira*) *muscorum*
Templ.
Isotoma viridis (Bourl.).
Vertagopus cinerea (Nic.).
V. arborea (L.).
Entomobrya albocincta Templ.
E. nivalis (L.).
E. nivalis var. *maculata* Schöff.

Orchesella cincta L.
Lepidocyrtus lanuginosus (Gmel.).
L. cyaneus Tullb.
Tomocerus minor Lubbock.
Sminthurinus aureus var. *ochropus*
Reut.
Dicyrtomina minuta var. *ornata*
Nico.
Dicyrtoma fusca (Lucas).

THE ANTS OF WHITBY AND DISTRICT, 1937

H. BRITTEN

(Member of the Northern Ecological Association)

DURING 1937 attention was paid to the collecting of the above in the district around Whitby.

Dr. G. H. Lowe, who resided in Robin Hood's Bay while on leave from Malay, made a study of the ants in that district with satisfactory results. He was able to add two ants to the list for Vice-County 62. The writer was able to accompany him on several occasions and to see the specimens he collected.

These notes provide additional data to my report of last year (*The Naturalist*, 1937, pp. 105-107).

New County and Vice-County records are indicated by the usual dagger and asterisk respectively.

- Formicoxenus nitidulus* Nyl. This little ant is very abundant in the nests of *Formica pratensis* Retz. at Helwath Beck, and was noted on 1/5/37 (H.B.), whilst queens, workers, males, ova, larvæ and pupæ were noted on 5/7/37 (G.H.L. and H.B.).
- Monomorium pharaonis* L. A very common ant in some of the old houses and warehouses in Whitby, 9/9/37 (H.B.).
- Myrmica lævinodis* Nyl. This ant is fairly common in the district; it was noted at The Hole of Horcum, 8/5/37 (H.B.); Sleights, 29/9/37 (H.B.).
- †*M. lævinodis* Nyl. var. *ruginodis-lævinodis* For. An addition to the County List, a small colony found at The Hole of Horcum, 4/8/37 (H.B.).
- M. ruginodis* Nyl. This ant is very common in the district, a small colony was noted in the nest of *Formica pratensis* Retz. at Helwath Beck, 1/5/37 (H.B.); and again on 5/7/37 (G.H.L. and H.B.); The Hole of Horcum, 8/5/37 (H.B.).
- M. sulcinodis* Nyl. Frequent about Robin Hood's Bay, 1937 (G.H.L.).
- M. scabrinodis* Nyl. Fairly common at Robin Hood's Bay, 1937 (G.H.L.).
- **M. scabrinodis* Nyl. var. *sabuleti* Mein. Several nests of this addition to the Vice-County List were found at Robin Hood's Bay, 1937, (G.H.L.); also at Beastcliff, Ravenscar, 1937 (G.H.L.).
- **M. lobicornis* Nyl. Another of Dr. Lowe's additions to the Vice-County List, nests occurring at Robin Hood's Bay, 1937 (G.H.L.); also at Beastcliff, Ravenscar, 1937 (G.H.L.).
- Leptothorax acervorum* F. Many colonies of this ant were found at Helwath Beck, nests being found in fallen branches, and in moss on rocks and boulders, 5/7/37 (G.H.L. and H.B.); Fylingdales Moor, 5/7/37 (G.H.L. and H.B.); The Hole of Horcum, 4/8/37 (H.B.).
- Acanthomyops (Donisthorpia) nigra* L. This black ant is frequent in the district; a small nest is recorded from The Hole of Horcum 8/5/37 (H.B.).
- A. (*Donisthorpia*) *flavus* F. This is the commonest ant in the district, having been noted from the following localities: The Hole of Horcum, 8/5/37 (H.B.); Robin Hood's Bay, 4/9/37 (H.B.); Uppang, 6/11/37 (H.B.).
- *A. (*Donisthorpea*) *umbrata* Nyl. A small colony of this addition to the Vice-County was found near Robin Hood's Bay, 4/9/37 (H.B.).
- †A. (*Donisthorpea*) *mixtus* Nyl. An addition to the County List, a small nest being found at Robin Hood's Bay, 4/9/37 (H.B.).
- †*Formica rufa* L. var. *rufo-pratensis* For. Another addition to the County List; nests of this were fairly frequent at Helwath Beck, 1/5/37 (H.B.); 5/7/37 (G.H.L.); Jagger Howe Dale, 1937 (G.H.L.).

†*Formica rufa* L. var. *alpina* Sant. Workers of this addition to the County List were collected at Helwath Beck, 1/5/37 (H.B.).

F. pratensis Retz. Very abundant at Helwath Beck, 1/5/37 (H.B.); 5/7/37 (G.H.L. and H.B.); 26/9/37 (H.B.); Jugger Howe Dale, 5/7/37 (G.H.L. and H.B.). Dr. Lowe also records this ant from the western side of the moors at Snailsworth, near Northallerton, 4/7/37 (G.H.L.).

Looking over some notes of ants captured in York a few years ago I note the following records are not included in the 'Aculeate Hymenoptera of Yorkshire' (Fordham and Butterfield). I take this opportunity to add them for the information of students of the ants of the County.

†*Brachymyrmex heeri* For. var. *aphidicola* F. A number of workers were discovered on banana plants received from the West Indies, York, 19/10/25 (H.B.).

†*Triglyphothrix lanuginosa* Mayr. A number of workers found in Illipie Nuts from North Borneo, York, 3/6/28 (H.B.).

AN ELECTRIC RAY AT SCARBOROUGH

W. J. CLARKE

ON Sunday, February 27th, the s.t. *Riby* landed at Scarborough a strange fish, the like of which none of the fishermen had ever seen before. It had been taken in the trawl net south-east of Flamborough Head. The fish proved, on inspection, to be a small example, 20 inches long, of the Electric Ray (*Torpedo marmorata*), which showed very well the marbled coloration on the back, and the fringe of sharp-pointed tubercles surrounding the spiracles, which are characteristic of this species. The colour above was a rich umber brown, closely marbled with white, beneath it was white tinged with red.

This fish is not included in the *Handbook of Yorkshire Vertebrata* published in 1881, and no Yorkshire specimen appears to have been recorded since that date. An electric ray was taken in Filey Bay several years ago, but it was not critically examined and its exact identity remains uncertain.

Several species of electric rays are known, two of which have occurred in British waters, usually off our western coasts. *T. marmorata* inhabits the waters of the Eastern Atlantic as far south as the Cape, and round into the Indian Ocean. They well deserve their name. In the forepart of their bodies they carry very intricate electrical batteries, each consisting of nearly 500 prisms, each one of which is divided into a number of cells filled with a clear jelly-like substance. With these batteries a fair-sized specimen, three or four feet in length, can give a shock sufficiently powerful to stun a man, and several such shocks can be delivered in rapid succession.

When this specimen was disembowelled, in preparation for preservation, three young ones were discovered inside it, which were perfect miniatures of their parent.

ENTOMOLOGY AROUND ROBIN HOOD'S BAY

JAMES M. BROWN, B.Sc., F.R.E.S.

AN account giving the results of entomological collecting in the Robin Hood's Bay and Sandsend districts during 1936 has already been published (*Naturalist*, 1937, pp. 88—93). Again in 1937, two visits were paid to Robin Hood's Bay, one during June-July and the other during September-October. The weather was once more favourable, and entomological work was possible during the whole of my stay, with the result that considerable additions can be made to our knowledge of the insect fauna of this region. During these visits collecting was restricted to the area around Robin Hood's Bay, and my best collecting grounds were in the main the same as those detailed in my previous paper, with two additional spots which proved highly productive, viz. :—

'Brockets,' an area of rough pasture, with much Bracken, Bramble, Wild Rose, and Hawthorn, sloping down to the beck (which is a stretch of Mill Beck).

Tan Beck, a delightfully secluded, well-wooded little glen, near the golf links at Ravenscar; and the neighbouring area, well overgrown with Gorse, Broom, and Bramble.

In the following lists, records are only given if they are additions, either to the species, or the localities, as recorded in the earlier paper.

As usual, † refers to new County records; and * to records not previously published for V.C. 62.

HEMIPTERA

Hemiptera seemed rather more plentiful than in the previous season, several of the less common species making their appearance, and although considerable attention was devoted to the order previously, a fair number were obtained during the visits in 1937 which were not recorded in 1936. Thus 21 species of Heteroptera and 17 species of Homoptera were obtained which were not mentioned in the earlier paper, and of these three species of Homoptera appear to be unrecorded for V.C. 62.

(a) HETEROPTERA

Pentatoma rufipes L. Nymphs were obtained from Oak in Ramsdale, 30/6/37, which emerged as adults on 9/7/37 and 13/7/37.

Elasmolesthus interstinctus L. Plentiful on Birch, Ravenscar, 9/10/37.

Coreus (*Enoplops*) *scapha* F. A species not very frequently taken in Yorkshire, occurred among rough vegetation on the cliffs, Robin Hood's Bay, 14/10/37. It occurs also near Scarborough and at Sandsend.

Trapezonotus arenarius L. A common ground species, Ramsdale, 21/6/37.

Reduviolus rugosus L. Rather plentiful, Brockets, 6/10/37.

Tetraphleps bicuspis H.S. Common on Scots Pine, Fylinghall, 30/9/37.

Anthocoris sarothamni D. & S. Abundant on Broom, Ravenscar, 6/7/37. My only previous Yorkshire record is Aislabey, also V.C. 62.

- Temnostethus pusillus* H.S. Usually taken on old Oaks, this time obtained on Beech, very likely an accidental occurrence, Ramsdale, 12/10/37.
- Bryocoris pteridis* Fall. Plentiful, both long- and short-winged forms, on Ferns, Oxbank Wood, 1/7/37.
- Pantilius tunicatus* F. Fairly plentiful on Oak, Brocketts, 28/9/37, 7/10/37. One immature specimen only was obtained last year.
- Calocoris ochromelas* Gmel. Frequent on Oak almost wherever these were beaten. Howdale, 12/6/37. Ramsdale, 30/6/37. Oxbank Wood, 2/7/37. Fylinghall, 7/7/37.
- C. sexguttatus* F. A common species on Nettles, Fylinghall, 1/7/37.
- C. alpestris* Mey. Not usually very common with us, but apparently more plentiful this season. Oxbank Wood, 2/7/37.
- Megacoelum infusum* H.S. An occasional species, on Oak, Ravenscar, 4/10/37.
- Plesiocoris rugicollis* Fall. Frequent on Sallow, Maw Wyke, 25/6/37.
- Dichroscytus rufipennis* Fall. Immature specimens on Scots Pine, Ramsdale, 30/6/37, 8/7/37.
- Lygus cervinus* H.S. Plentiful on Ash, Ramsdale, 30/6/37, 7/7/37. Ravenscar, 6/7/37.
- Dicyphus stachydis* Reut. Fylinghall, 30/9/37. Ravenscar, 4/10/37.
- Cyllocoris flavoquadrimaculatus* DeG. Very plentiful on Oak, Howdale, 12/6/37. Ramsdale, 21/6/37.
- C. histronicus* L. Also on Oak, and plentiful. Ramsdale, 30/6/37. Oxbank Wood, 2/7/37.
- Blepharidopterus angulatus* F. Ravenscar, 4/10/37. Brocketts, 5/10/37.
- Heterocordylus tibialis* Hahn. On Broom, Ravenscar, 23/6/37.
- Malacocoris chlorizans* Fall. On Hazel, Brocketts, 5/10/37.
- Harpocera thoracica* Fall. Fairly plentiful about Oaks, Howdale, 12/6/37. Ramsdale, 21/6/37.
- Phylus palliceps* Fieb. On Oak, Brocketts, 2/7/37. (Sandsend is my only previous record for V.C. 62.)
- P. melanocephalus* L. Rather more common, also found on Oak. Oxbank Wood, 2/7/37. Ravenscar, 5/7/37.
- Psallus ambiguus* Fall. Oxbank Wood, 1/7/37.
- P. betuleti* Fall. Brocketts, 28/6/37, 28/9/37.
- P. variabilis* Fall. Ramsdale, 7/7/37. Brocketts, 2/7/37.
- Asciodema obsoletum* D. & S. Abundant on both Broom and Gorse, Fylinghall, 30/9/37. Ramsdale, 27/9/37.

(b) HOMOPTERA

- Idiocerus elegans* Flor. A brightly-coloured species, not very frequently taken with us. It occurs on Sallow. Maw Wyke, 25/6/37.
- Euscelis plebejus* Fall. In rough grass, or the cliffs, Robin Hood's Bay, 13/10/37.
- Deltoccephalus ocellaris* Fall. Ramsdale, 8/7/37. On the cliffs, Robin Hood's Bay, 13/10/37.
- Jassus mixtus* Fab. Plentiful. Brocketts, 5/10/37. Ramsdale, 29/9/37. Fylinghall, 12/10/37.
- Thamnotettix splendidulus* Fab. Among Ivy, Fylinghall, 12/10/37.
- Mocytia croceus* H.S. In rough grass on the cliffs, Robin Hood's Bay, 14/10/37.
- Limotettix nigricornis* Sahlb. On the cliffs, Robin Hood's Bay, 13/10/37.
- L. sulphurella* Zett. Along with the last, 13/10/37.
- Cicadula sexnotata* Fall. Also on the cliffs, Robin Hood's Bay, 14/10/37.
- **Dikraneura mollicula* Boh. Ravenscar, 4/10/37.
- D. variata* Hdy. In grass on the cliffs, Robin Hood's Bay, 13/10/37.
- Chlorita flavescens* Fab. Plentiful in Ivy, Fylinghall, 12/10/37.
- Eupteryx stachydearum* Hdy. Very abundant on *Teucrium*, on the cliffs, Ravenscar, 13/10/37.

- Typhlocyba tenerrima* H.S. Plentiful on Bramble, Brockets, 13/10/37.
 Ravenscar, 9/10/37. Robin Hood's Bay, 14/10/37.
- T. quercus* Fab. On Oak, Ravenscar, 9/10/37.
- T. ulmi* L. Abundant wherever Elm was examined. Ramsdale, 29/9/37.
 Brockets, 7/10/37. Ravenscar, 4/10/37.
- T. nitidula* Fab. On Elm. Ramsdale, 29/9/37, 12/10/37. Brockets, 7/10/37. (This striking species has previously been taken only in Mulgrave Woods, in V.C. 62.)
- **Edwardsiana rosae* L. Plentiful on Wild Rose. Brockets, 5/10/37.
 Cliffs, Robin Hood's Bay, 14/10/37.
- **E. lethierryi* Edw. Along with the last, on the cliffs, Robin Hood's Bay, 14/10/37.
- Erythroneura scutellaris* H.S. Abundant among grass on the cliffs, Robin Hood's Bay, 13/10/37.
- Cixius pilosus* Oliv. Widely distributed, frequently on Hawthorn. Maw Wyke, 25/6/37. Ramsdale, 30/6/37. Oxbank Wood, 1/7/37.
 Brockets, 28/6/37.
- C. nervosus* L. Ramsdale, 30/6/37. Brockets, 3/7/37.
- Delphacodes forcipata* Boh. Among grass, Ramsdale, 7/7/37. (My only previous locality in V.C. 62 is Buttercrambe Woods.)
- D. fairmairei* Perr. In grass, Ramsdale, 7/7/37.
- Dicranotropis hamata* Boh. Common at the roots of Rushes, Ramsdale, 7/7/37.
- Stiroma pteridis* Boh. Abundant on Bracken, Brockets, 28/6/37.
 Immature individuals were plentiful, 5/10/37.
- S. affinis* Fieb. Among grass, Oxbank Wood, 1/7/37.
- Aphalara calthae* L. Ramsdale, 12/10/37. Frequent on trunks of Scots Pine at this time of the year, over-wintering among the needles.
- Psyllopsis fraxini* L. On Ash, Fylinghall, 1/10/37.
- Psylla spartii* Guer. On Broom in plenty, Ravenscar, 23/6/37, 5/7/37.
- Trioza remota* Forst. Ramsdale, 12/10/37.

NEUROPTERA, ETC.

Ten species not noted during the previous season's collecting can now be added.

- Coniopteryx tineiformis* Curt. A plentiful though inconspicuous species, frequent on Oak. Howdale, 12/6/37. Ramsdale, 14/6/37. Brockets, 28/6/37. Maw Wyke, 25/6/37. Oxbank Wood, 1/7/37. Ravenscar, 23/6/37.
- Conwentzia psociformis* Curt. Another small but plentiful species, taken on Oak and Holly. Brockets, 28/6/37. Oxbank Wood, 1/7/37. Ramsdale, 8/7/37. ('Cleveland' is the only previous record for V.C. 62.)
- Semidalis aleurodifformis* Steph. Not so plentiful. Ramsdale, 8/7/37.
- Eumicromus paganus* L. Ramsdale, 30/6/37. (The only earlier locality in V.C. 62 is Fylinghall, 29/6/29, W.J.F.)
- Hemerobius lutescens* Fabr. On Oak, Oxbank Wood, 2/7/37.
- H. micans* Oliv. Also on Oak. Tan Beck (Ravenscar), 23/6/37. Oxbank Wood, 1/7/37. Ramsdale, 14/6/37.
- Wesmaelius quadrifasciatus* Reut. On Scots Pine, Ramsdale, 30/6/37.
- Chrysopa flava* Scop. Plentiful on Oak. Brockets, 16/6/37, 2/7/37. Maw Wyke, 26/6/37. Oxbank Wood, 1/7/37. Fylinghall, 7/7/37. Ravenscar, 5/7/37.
- C. vittata* Wesm. Also frequent on Oak. Ramsdale, 21/6/37, 8/7/37. Oxbank Wood, 1/7/37. Brockets, 2/7/37. Ravenscar, 5/7/37.
- C. ciliata* Wesm. Ramsdale, 25/6/37, 8/7/37. Oxbank Wood, 1/7/37. Brockets, 2/7/37.
- C. albolineata* Kill. On Oak. Ramsdale, 21/6/37. Oxbank Wood, 1/7/37.

- Chrysopa ventralis* Curt. Not a very common species. Brockets, 2/7/37. Ramsdale, 8/7/37. (Sandburn Woods is the only previous locality in V.C. 62.)
- C. carnea* Steph. Robin Hood's Bay, 14/10/37. (Previously taken at Whitby, 5/4/36 and 4/4/37, H.B.) All these captures were made within doors, the insect evidently hibernating.
- Nathanica capitata* Fabr. Tan Beck (Ravenscar), 23/6/37. Several individuals disturbed from Oak, no Conifers being noted anywhere near.
- Panorpa germanica* L. Ravenscar, 23/6/37. Maw Wyke, 25/6/37. Oxbank Wood, 1/7/37.

PSOCOPTERA

Although Psocids did not seem to be quite so plentiful as they were last season, five species not taken then, appear in the list for this year, including three which were among the season's additions to the county fauna. (*Naturalist*, 1938, p. 40.)

- Trichadenotecnum sexpunctatum* L. Maw Wyke, 3/10/37. (Sleights is the only previous V.C. 62 record.)
- Amphigerontia bifasciata* Latr. On Oak, Ramsdale Woods, 5/7/37.
- Loensia fasciata* Fabr. Ramsdale, 5/7/37.
- Stenopsocus immaculatus* Steph. Common on Hazel, Sallow, and other trees, in June and September.
- †*S. stigmaticus* Im. and Lebr. Beaten from Oak, Holly, and Ivy. Tan Beck (Ravenscar), 4/10/37, 9/10/37. Brockets, 5/10/37.
- Reuterella helvimacula* End. On trunks of Scots Pine. Ramsdale, 29/9/37.
- †*Caecilius fuscipennis* Latr. Beaten from Hawthorn beneath Oak. Brockets, 28/9/37.
- C. obsoletus* Steph. Common on Scots Pine, and Yew. Ramsdale, 29/9/37.
- C. burmeisteri* Br. Taken with the last, Ramsdale, 29/9/37.
- Peripsocus phaeopterus* Steph. Oxbank Wood, 1/10/37. Brockets, 28/9/37.
- Ectopsocus briggsi* McL. Widely distributed in the district, and taken on Oak and Holly, etc. Maw Wyke, 3/10/37. Tan Beck, 4/10/37, 9/10/37. Ramsdale, 29/9/37, 12/10/37. So far our records for this species are confined to V.C. 62.
- Elipsocus westwoodi* McL. A plentiful species. Tan Beck, 4/10/37. Brockets, 5/10/37. Maw Wyke, 3/10/37. Oxbank Wood, 1/7/37. Ramsdale, 29/9/37.
- E. hyalinus* Steph. Brockets, 28/6/37.
- †*E. consimilis* McL. On Scots Pine, Ramsdale, 29/9/37. This species has also occurred near Sheffield.
- Mesopsocus unipunctatus* Mull. Brockets, 28/6/37. Oxbank Wood, 1/7/37. Maw Wyke, 25/6/37.
- Philotarsus flaviceps* Steph. Common on Conifers. Ramsdale, 29/9/37. Brockets, 5/10/37.
- **Trogium (Atropus) pulsatorium* L. Within doors, Robin Hood's Bay, 10/10/37. (Specimens have been received from Whitby, 3/36, H.B.).

PLECOPTERA

Four species which were not noted last season, are recorded this year.

- Taeniopteryx risi* Mort. Oxbank Wood, 1/7/37.
- Isoptera grammatica* Poda. A common species and usually abundant. Ramsdale, 21/6/37. Maw Wyke, 25/6/37.
- Chloroptera tripunctata* Scop. Ramsdale, 14/6/37. Brockets, 16/6/37.
- C. torrentium* Pict. Maw Wyke, 25/6/37. Ramsdale, 14/6/37.

- Leuctra inermis* Kmpy. Widely distributed in the district. Howdale, 12/6/37. Ramsdale, 14/6/37. Ravenscar, 23/6/37. Maw Wyke, 25/6/37.
- L. fusciventris* Steph. Very plentiful almost everywhere. (By an oversight entered last year as *fuscinervis*.)
- Protonemura meyeri* Pict. Another plentiful species. Howdale, 12/6/37. Maw Wyke, 25/6/37.
- Amphinemura cinerea* Steph. Very plentiful and widely distributed in the district. Oxbank Wood, 1/7/37. Ramsdale, 14/6/37, 8/7/37. Brockets, 16/6/37, 28/6/37. Ravenscar, 26/6/37. Maw Wyke, 25/6/37.
- A. standfussi* Ris. This species has probably been much overlooked owing to its resemblance to the previous species, but it seems to be widely distributed in V.C. 62. Brockets, 28/6/37. Maw Wyke, 25/6/37. Ramsdale, 8/7/37.
- Nemoura cambrica* Steph. This species does not appear to be very plentiful but was also taken during the meeting in 1933. Brockets, 25/6/37. Ramsdale, 8/7/37.
- N. marginata* Pict. Ramsdale, 8/7/37.
- N. variegata* Oliv. Brockets, 28/6/37. Oxbank Wood, 1/7/37. Ramsdale, 21/6/37.
- Nemurella inconspicua* Pict. Brockets, 19/6/37, 2/7/37. Not previously taken in this district.

TRICHOPTERA

Last year I remarked that the variety of Caddis-flies about the streams of the district did not come up to expectations. This season twelve species not taken then can be noted, of which one is new to the county and five new to the V.C. 62.

- Glyptotaelius pellucidus* Retz. This striking species occurred only in Oxbank Wood, 1/7/37.
- Limnophilus sparsus* Curt. A common and widely distributed species. Ramsdale, 14/6/37, 25/6/37. Oxbank Wood, 1/7/37. Howdale, 12/6/37.
- L. centralis* Curt. Another common species. Ravenscar, 26/6/37, 5/7/37. Maw Wyke, 25/6/37. Brockets, 29/6/37.
- L. auricula* Curt. Perhaps more widely distributed even than the previous ones. Brockets, 19/6/37, 3/7/37. Ramsdale, 25/6/37, 8/7/37. Oxbank Wood, 2/7/37. Ravenscar, 26/6/37.
- **L. luridus* Curt. Not a very common species. Ramsdale, 8/7/37. (A specimen also received from Hole of Horcum, 27/6/37, H.B.)
- Micrpterna sequax* McL. A dead specimen taken from a spider's web, Tan Beck (Ravenscar), 9/10/37.
- Drusus annulatus* Steph. A widely-distributed species. Ramsdale, 29/9/37.
- Stenophylax latipennis* Curt. This fine species again occurred at Ramsdale, 12/10/37, 30/9/37, and at Brockets, 28/9/37.
- Silo pallipes* Fabr. This species occurs quite commonly about most of the becks in the district. Ramsdale, 14/6/37. Brockets Beck, 15/6/37. Maw Wyke, 25/6/37. Oxbank Wood, 1/7/37.
- Crunoecia irrorata* Curt. Taken last season near Fylinghall, it occurred this year also in Ramsdale, 14/6/37.
- †*Adicella reducta* McL. This addition to the county occurred by Brockets Beck, 2/7/37.
- **Beraea maurus* Curt. Ramsdale, 8/7/37. Maw Wyke, 25/6/37. (Also sent from Hole of Horcum, 31/8/37, H.B.)
- Tinodes aureola* Zett. This species, whose larvae are associated with wet rock surfaces, occurred by Tan Beck (Ravenscar), 5/7/37. (The only previous V.C. 62 locality is Hayburn Wyke, G.T.P.)

- **Plectrocnemia geniculata* McL. This not very common species occurred in Ramsdale, 14/6/37.
Wormaldia occipitalis Pict. Tan Beck, 9/10/37.
Rhyacophila dorsalis Curt. A common species. Brockets, 28/9/37.
R. obliterata McL. About equally common. Brockets, 7/10/37.
 **Glossosoma boltoni* Curt. Tan Beck (Ravenscar), 26/6/37. This species seems to be local in its distribution. I have only two other county localities for it.
Agapetus fuscipes Curt. A very plentiful and widely-distributed species. Tan Beck, 26/6/37. Maw Wyke, 25/6/37. Oxbank Wood, 1/7/37. Ramsdale, 8/7/37.
 **Hydroptila maculachlani* Klap. This small active species occurred by Brockets Beck, 5/10/37.

EPHEMEROPTERA

Although Mayflies were not seen in such large numbers as on one or two occasions last year—the only species noticed flying in swarms being *Rhithrogena semicolorata*—six species not recorded last season were taken this year, and additional localities determined for others.

- **Ephemera danica* Mull. Ramsdale, 25/6/37. Oxbank Wood, 1/7/37. (Specimens also received from Helwath Beck, 6/6/37, H.B.)
Paraleptophlebia cincta Retz. Brockets, 5/10/37. (Hovingham is the only previous V.C. 62 locality.)
Habrophlebia fusca Curt. Brockets, 2/7/37, 7/7/37.
Ephemerella ignita Poda. Brockets, 2/7/37, 7/7/37.
Baetis rhodani Pict. Ramsdale, 14/6/37. Oxbank Wood, 1/7/37.
 **B. pumilus* Burm. Ramsdale, 14/10/37. Oxbank Wood, 1/7/37. Brockets Beck, 28/9/37, 5/10/37.
Centroptilum luteolum Mull. Oxbank Wood, 1/7/37.
Rhithrogena semicolorata Curt. One of the commonest species. Howdale, 12/6/37. Ramsdale, 14/6/37. Fylinghall, 7/7/37. Oxbank Wood, 3/7/37.
Heptagenia lateralis Curt. Maw Wyke, 25/6/37. Brockets Beck, 2/7/37.
Ecdyonurus longicauda Steph. Brockets Beck, 28/9/37, 7/10/37. Oxbank Wood, 1/10/37.

APTERYGOTA

Although these very small insects were not specially looked for, a number were seen while working with other orders, and it is just as well to put them on record, though this is in no way a representative list of species inhabiting the area.

(a) COLLEMBOLA.

Anurida maritima Guer. (plentiful on rock-pools at Robin Hood's Bay and Ravenscar). *Entomobrya multifasciata* Tullb., *E. nivalis* L., *E. albocincta* Templ., *Sira platani* f. *nigromaculata* Lubb., *Orchesella cincta* L. and var. *vaga* L., *O. litoralis* Brown (in the original locality at Runswick Bay and among shingle at Ravenscar), *Lepidocyrtus lanuginosus* Gmel., *Tomocerus minor* Lubb., *Sminthurus viridis* L., and *Allacma fusca* L.

(b) THYSANURA.

Petrobius brevistylis Carp., the common Rock-jumper, was very numerous among the shingle at the base of the cliffs, Runswick Bay, Robin Hood's Bay, and Ravenscar.

ELF-DARTS

T. SHEPPARD, M.Sc., F.G.S.

AMONG a miscellaneous collection of miniature toys, dolls, and other objects, mostly of a century or so old, recently presented to the Museum at Hull by H.M. Queen Mary, is a small flint arrow-head, which has been mounted so as to be worn as a charm. This arrow-head is made of a semi-transparent light-coloured flint, similar to those found in the Bridlington District, and the points of the two barbs have been broken away, so as to leave it more or less heart-shaped. The fastener for attachment is fixed to the central projection. The flint is one inch in length, and just over half an inch in width, and well worked with a sharp point and edges.

In his book on *Ancient Stone Implements of Great Britain*, the late Sir John Evans illustrates a very similar flint arrowpoint, which is mounted in silver, and described as an Elf-Shot. These Elf-Shots were worn as charms not only in England, but in various parts of the world. Even so long ago as the days of Pliny, a figure of a flint arrow-head is called a 'Glossopetra,' which 'resembleth a man's tongue and groweth not upon the ground, but in the eclipse of the moone falleth from heaven' and 'is thought by the magicians to be verie necessarie for those that court faire women.'

In a *Catalogue and Description of the Natural and Artificial Rarities belonging to the Royal Society and preserved at Gresham College*, published in 1681, a similar object is referred to as 'The flat Bolthead—Anchorites.'

There is a superstition attached to arrow-heads in Scotland, where they are popularly regarded as the missiles of elves. 'These wonderful stones are sometimes found in the fields and in public and beaten roads, but never by searching for them; to-day, perhaps one will be found where yesterday nothing could be seen, and the afternoon in places where before noon there was none, and this most frequently under clear skies and on summer days.'

In Ireland, peasants frequently used to mount these elf-arrows in silver, and wear them on their necks as amulets against elf-shot. In that country, when cattle were ill, the beast was supposed to suffer from elf-shot or stricken by fairy or elfin darts, and the doctor usually managed to extract one from the skin of the animal, and thus cure it! The late Llewellynn Jewitt records the 'fairy darts' as obtaining in Derbyshire, where they were supposed to have been used by the fairies for wounding cattle. Similar superstitions prevailed in Scandinavia, and they occur appended to Etruscan necklaces



of gold. They are also recorded from Turkey and as far away as New Mexico.

Unfortunately, it is not known where this particular object was obtained, but it makes a welcome addition to the Folklore Series in the Mortimer Museum at Hull, where large collections of these Neolithic arrows are on view.

RECORDS

DEPREDAATION BY THE LONG-TAILED FIELD MOUSE (*MUS SYLVATICUS*)

DURING the latter part of autumn, 1937, considerable damage was done in the cemetery at Kirkheaton, near Huddersfield, by this mouse attacking and completely eating newly-planted corms of crocus and bulbs of scilla and muscari. One of the best preventatives against attack has been the powdered composition of firelighters.—W. E. L. WATTAM, Newsome.

GARGANEY IN WEST RIDING

ON April 23rd I disturbed a mixed party of Mallard and Teal from a pool in the south of the West Riding. One bird remained behind, which on examination, through binoculars, proved to be a Drake Garganey (*Anas querquedula*). After giving me a good view of its wavy white eyestripe and blue-grey coverts, it also took wing. The occurrence of the species in the West Riding is sufficiently uncommon to justify permanent record.—RALPH CHISLETT.

THE STATUS OF THE RED AND GREY SQUIRREL IN THE HUDDERSFIELD DISTRICT

It is pleasing to report the continued increase of the Red Squirrel in the Huddersfield District. Definite localities known to me from my own observations are Cannon Hall Park, Cawthorn, Bretton Park, Gunthwaite, the woods in the Kirkburton, Holme and Meltham Valleys, and Beaumont Park. I had an interesting observation on the afternoon of Saturday, August 7th, 1937. I was resting on Knowl Bank, Farnley, on each side of which is an oak woodland divided by the highway. From the wood on the right came a Red Squirrel at leisurely pace, climbed the mound on which I sat, eventually entering the wood to the left. About half an hour later came the greater surprise, a fine example of the Grey Squirrel coming hurriedly from the wood to the right, crossing the road to the foot of the mound, worked among the rough grass at its base as if seeking for a scent, eventually clambering a wall into a meadow beyond, and after climbing another wall, entering the wood to left. This was the first time I had seen the Grey Squirrel in our district, although I had knowledge of its occurrence from competent authority in the woods surrounding Cannon Hall

Park. It has also been reported as having been seen near to the Flouch Inn, Penistone.—W. E. L. WATTAM, Newsome.

TERATOLOGICAL FORMS OF *PLANTAGO LANCEOLATA* L.
WHILST interesting myself in the plant life in the vicinity of St. Mary's Isle, Whitley Bay, at the latter part of July, 1937, I came across a few plants of *Plantago lanceolata* L. producing monstrous forms. One plant had produced two peduncles about ten inches in length bearing five terminal foliations which were evidently bracts developed into foliage-like leaves. There was no true inflorescence. Other plants yielded twenty-seven peduncles each having the normal terminal inflorescence with three very shortly-stalked inflorescences at the base. The soil upon which the plants were growing was a humus of decayed vegetation resting upon a depth of seven inches of blown sand.

In August, 1937, I again found plants at Farnley Hey, near Huddersfield, growing upon roadside waste with peduncles carrying the normal inflorescence and having three shortly-stalked inflorescences at the base. The first time I noted this monstrous form at this locality was in 1908, and although I have kept careful observation upon this locality and its immediate vicinity since, I have noted nothing but the normal type of flower during the interim period of twenty-nine years. My previous notes, as well as those of other contributors, appeared in *The Naturalist* for 1931, pp. 139-143, 176, 222-223, and 316. W. E. L. WATTAM, Newsome.

DISTRIBUTION OF *PHIGALIA PILOSARIA* IN THE HUDDERSFIELD DISTRICT

THIS early moth is fairly well distributed throughout the Huddersfield District, especially in those parts where deciduous woodlands occur. On collating my records and comparing same with the map of the Huddersfield District, which is based on the Ordnance Survey, the interesting fact is revealed that here apparently the altitudinal range of this moth is restricted to 800 feet. The type and melanic forms occur in the mixed woodlands in the Kirkburton valley, the extensive range of woods at Cawthorn to Bretton, in the Holme Valley as far as Netherthong but not beyond, and throughout the Meltham Valley to Lockwood. In the Colne Valley, wooded areas are few. Frequent search by myself and other entomologists have failed to record it at Golcar, Slaithwaite, and Marsden. The only place in this valley where I have seen the moth is in a small wooded valley at Scammonden, where both the type and melanic forms occur, both being very dwarfed in size. On the northern outskirts of the district I have seen type form in Fixby woods, and along the north-east boundary the type form in the woods at Heaton Lodge and Whitley.—W. E. L. WATTAM, Newsome.

THE HARRISON-HUTTON COLLECTION OF BRITISH LAND AND FRESHWATER MOLLUSCA

ELSIE M. MOREHOUSE

A CATALOGUE of this collection compiled by Mr. W. Thurgood, 16 Moss Lane, Alwoodley, Leeds, the present owner of it, has been forwarded to me by Mr. Chris A. Cheetham, F.R.E.S., from whom he had received it. Mr. Thurgood would like to confirm all the old records and habitats and would welcome any assistance from members and associates of the Yorkshire Naturalists' Union in carrying out this work. Already three habitats are known to be non-existent. These are : Dog and Gun Pond, Leeds ; Killingbeck Pond ; Pond on Castle Hill, Scarborough.

It may be that the home of some of these species have disappeared through building operations, etc. Again, some habitats may yield new species additional to those already taken in that particular area or water.

Anyone who is interested and who will write to the present owner can be informed as to species and habitats.

The catalogue has taken much time to compile, and in this work Mrs. Thurgood has taken an active part. We wish both she and her husband success in their adventures.

REVIEWS AND BOOK NOTICES

Companion into Essex, by **Herbert W. Tompkins**, pp. xvii+267, with 16 gravure plates. Methuen. 7/6. The woodlands, marshes and estuaries of Essex are, or should be, well known to the naturalist, but in the volume under review the emphasis is rather on the human and historical side. It is extremely well written throughout by an author who knows the country very well and who is an old hand at this kind of writing. He has succeeded in producing a most companionable book which gives, on every page, evidence of painstaking research. The illustrations are charming and, like the rest of the book, are very well printed.

My Woodland Home, by **Cherry Kearton**, pp. 156, with 81 illustrations. Jarrolds. 7/6. Any book by Cherry Kearton is sure of a good welcome from naturalists. This new volume is all about Mr. Kearton's new home in the Surrey woods, less than 17 miles from London. The author tells us how as a youth he wandered through these very woods and here took some of the earliest of the photographs which were eventually to bring him world-wide fame. Now after a life-time of adventure in all parts of the globe he has been able to acquire the self-same piece of woodland, very little changed, and in the heart of it has built himself a very charming home. The volume deals with the wild life on this estate, which must be an ideal corner of England for any naturalist. The illustrations are well up to the Kearton standard.

Birds of Canada, by **P. A. Taverner**, pp. 445, with 173 colour plates and 488 black and white illustrations. John Murray. 18/-. This is a masterly treatise which deals with all birds known to occur in Canada. In the author's own words, '*Birds of Canada* has been written

to awaken and stimulate an interest, both æsthetic and practical, in the study of Canadian birds ; to suggest the sentimental, scientific, and economic value of that study ; to assist in the identification of native species ; to furnish the economist with a ready means of determining bird-friend from bird-foe so that he may act intelligently towards them and in the best interests of himself and the country at large ; to present in a readily accessible form reliable data upon which measures of protective legislation may be based ; to point out some of the pitfalls that have caught the inexperienced in the past, and to suggest methods for their future avoidance.' This ambitious programme has been carried out most thoroughly, and we can heartily recommend this surprisingly cheap book to all serious ornithologists. Descriptions of species while not reaching the degree of detail to be found in Witherby's *Handbook of British Birds* are yet quite sufficient for the purposes stated, although the songs and cries of birds are almost entirely neglected. The illustrations, both coloured and black and white, are very fine indeed.

Bird Watching Days, by **A. W. P. Robertson and R. D. Powell**, pp. 253, with 32 photographs by the authors. Collins. 7/6. This is an entertaining account of the adventures of two successful bird-photographers to whom ornithology is but a part-time hobby. Many species of British birds come under review, although most space is devoted to the inhabitants of the wild places. The authors have had considerable experience with ravens, and other interesting birds dealt with include the Stone Curlew, Buzzard, Montagu's Harrier and the Bittern. The book should stimulate beginners in bird-photography and is a useful contribution to the literature of the subject.

A York Miscellany, by **I. P. Pressly**, pp. xv+269, illustrated by black and white drawings by Ellen M. McLane, and by 8 photographic plates. A. Brown & Sons, Ltd., 6/-. Miss Pressly very modestly disavows originality in the production of this dainty and pleasing volume, but all who read her book will be very much in her debt for gathering together such a fine collection of biographical and historical items relating to bygone York. Miss Pressly has a bright and entertaining style, and in Mrs. McLane she has found an artist whose drawings are appropriate to the text. The few photographs are well chosen, and the printing and binding of the book are excellent. Such a volume would make a much more interesting souvenir of a visit to York than an ordinary guide book.

Wild Birds in Britain, by **Seton Gordon**, pp. viii+120, with 2 plates in colour and 100 illustrations from photographs. Batsford, 8/6. Mr. Seton Gordon has always something interesting to say when he writes about birds, and the work under review is crowded with first-hand observations presented in a very readable style. The author seems to have had the run of some of the best bird photographs ever made, and those he has chosen are exceedingly well reproduced. They are all so good that it would be difficult to single out one or two for special mention, but most people would share Mr. Gordon's admiration for the picture of a pair of stone curlews at the nest, the work of Mr. Eric Hosking. Those of our readers who spend many hours in springtime in the "hide" will best appreciate Mr. Hosking's consummate skill. We can safely recommend this book as an ideal gift for a bird lover, young or old.

NEWS FROM THE MAGAZINES

The Entomologist's Record for April contains 'Sestrieres, Clavieres and Baths of Valdieri,' by H. G. Harris ; ' *Ectobius lividus* Fabr. in Norfolk,' by K. H. Chapman ; 'The Notorious Case of Lady Glanville,' by M. Burr ; Scientific Notes, Collecting Notes, and supplements : 'The British Noctuae and their Varieties,' by H. J. Turner ; and 'The

International Code of Zoological Nomenclature,' by A. J. Wightman; and 'Nomenclature, a Plea for Common Sense,' by Brig.-Gen. B. H. Cooke.

The London Naturalist for 1937 gives considerably more space than usual to entomology, some of the articles being 'Notes on the Courtship of Flies,' by L. Parmenter; 'Insect Life in a Dying Willow,' by W. O. Steel; 'The Variation of *Enallagma cyathigerum* Charp. in Kerry,' by A. F. O. Farrell; 'Aculeates on the Norfolk Coast,' by K. M. Guichard; 'Diptera in Worth and Tilgate Forests, Sussex,' by G. Waller; 'Some Diptera Records,' by L. Parmenter; 'Notes on Dragonflies, 1937,' by E. B. Pinniger; 'British Butterflies in 1937,' by H. J. Burkill; and 'Plant Gall Records for 1937,' by H. J. Burkill; other articles are 'Atypus affinis Eichw. in the London District,' by J. E. S. Dallas; 'Entomology in Relation to the Prevention of Malaria,' by Sir Malcolm Watson; 'Red and White Clover,' by G. H. Spinney; 'The Survey of Limpsfield Common,' by various writers; 'Notes on the Association of Thrushes and Hawfinches,' by P. W. E. Currie; 'Observations on a Colony of House Martins, 1929-35,' by C. Longfield; and 'The Grey Squirrel in Epping Forest,' by F. J. Johnston; 'The London Bird Report for 1937,' is published as a supplement.

Sands, Clays and Minerals, Vol. III, No. 3, contains the usual comprehensive assortment of articles on British and Colonial minerals, all with a definite practical emphasis. The editor continues his useful commentary on the rôle played by minerals in world affairs and makes pertinent suggestions on the tariff question. The increasing demand for magnesium and the way it is satisfied is described by L. Sanderson, while the special uses of the rare metals, tantalum and niobium are outlined by R. Genders. Colonial resources treated include Oil in Alberta, Mining in British Columbia and Uganda. In both these latter areas it is pointed out that there is every hope for the intelligent prospector. British resources receive attention from E. H. Davison on the very prosperous china-clay industry of Cornwall, and from R. W. Toll on Arsenic deposits for which the future is not bright, while G. W. Himus contributes a general article on the selection of coal for industrial purposes. Some of the less common uses of rocks and minerals such as rubber-filling, repair of historical buildings and spun rock wool for insulation are also described. The editor certainly contrives to maintain the standard and the interest of this useful journal.

The Entomologist for May contains 'Rediscovery of *Callicera yerburyi* Verrall (Diptera Syrphidæ): its breeding habits, with a description of the larva,' by R. L. Coe (with plate, several females taken in a pine forest near Braemar); 'A Migration of Cabbage White Butterflies in Hertfordshire, in May, 1937,' by K. Grant; 'Notes on British Odonata in 1937,' by J. Cowley; 'The Life Story of *Apatura iris*,' by S. Morris; 'The Flying Habits of Butterflies when Paired,' by B. C. S. Warren; and numerous notes and observations.

The Entomologist's Record for May contains (Obituary) 'Edward Meyrick, B.A., F.R.S., F.R.E.S., F.Z.S.,' by T. B. Fletcher; 'The arrangement of Collections of British Lepidoptera in Museums,' by E. A. Cockayne; 'Names of Microlepidoptera,' by T. B. Fletcher; 'Scientific Notes' and 'Collecting Notes,' and supplements, 'The British Noctuae and their Varieties,' by H. J. Turner, and 'Variation of some Butterflies in Anterior Asia and Morocco,' by R. Verity.

The Entomologist's Monthly Magazine for June contains 'A Preliminary List of the Coleoptera of Windsor Forest,' by H. St. J. Donisthorpe; 'A New Species of *Parandrocephalus* from Java (Col., Cerambycidae),' by K. G. Blair; 'The Parasites of British Birds and Mammals. XIX. Further Records of *Ornithomyia* spp. from British Birds, together with notes,' by G. B. Thompson; 'Check List of the Collembola of Oceania,' by E. Handschin; and several shorter notes.

THE VEGETATION OF YORKSHIRE AND SUPPLEMENT TO THE FLORAS OF THE COUNTY

(Continued from page 164)

ONAGRACEÆ—continued.

Epilobium roseum Schreb.

× *E. brachiatum* Celak. (*roseum* × *obscurum*).

Meanwood Lodge, 1900 !

× *E. heterocaule* Borbas (*montanum* × *roseum*).

Thorner, 1871 !

Epilobium palustre L.

Becoming the *lineare* Krause. in situations that 'force' and spindle it. It hybridises too, I think, with *E. alsinifolium* and the colline dwarf race of *E. montanum* at Cautley Spout when it is × *E. montaniforme* Knaf.

× *E. purpureum* (Fr.) (*E. palustre* × *roseum*).

Topcliffe, J. G. Baker.

× *Schmidtianum* Rostk. (*E. palustre* × *obscurum*). = *E. virgatum* Fr. = *E. ligulatum* Baker.

Barnard Castle, W. Borrer, 1854 ; Black Beck, Baysdale, W. Mudd, *teste* Baker ; Sedbergh, J. Backhouse, 1854 ; Cautley and further up Rawtheydale with other *Epilobium* hybrids !

E. alsinifolium Vill.

Not in East Riding Flora.

× *E. salicifolium* Facch. (*E. alsinifolium* × *montanum*).

Uldale, J.F.P., 1902 !

× *E. Haynaldianum* Haussk. (*E. alsinifolium* × *palustre*).

Cautley stream side !

E. alpinum L.

North Riding only, Mickle fell. *Naturalist*, 1935, p. 67.

E. nummularifolium R. Cunningham. Denizen.

E. pedunculare A. Cunningham.

Alien. Hackness.

Œnothera.

The species *Œ. biennis* which prevailed from 1831-70, is now hardly seen, *Œ. odorata* Jacq. took its place and now *Œ. Lamarkiana* Ser. is the commonest of these aliens.

Circæa lutetiana L.

C. alpina L.

Not in East or North Riding Floras. I have only seen *C. intermedia* Ehrh. on the Lune side about Lowgill where *C. alpina* is recorded, and suspect many records for the latter to refer to the former. W.A.S.

CUCURBITACEÆ

Bryonia dioica Jacq.

Cucumis Anguria L.

var. *ficifolia* Bouche (vel. *C. prophetarum* Willd.). Alien. Sewage works, Frizinghall, 1905, F. Rhodes !

FICOIDEÆ

Mesembryanthemum crystallinum L.

Alien. Sewage works, Frizinghall, 1910, F. Rhodes !

UMBELLIFERÆ

Hydrocotyle vulgaris L.

Eryngium maritimum L.

Not in West Riding Flora.

Sanicula europæa L.

Conium maculatum L.

Smyrnum Olusatrum L. Denizen.

Bupleurum rotundifolium L. Colonist.

B. Odontites L., *B. lancifolium* Hornem. var. *heterophyllum* Link., *B. opacum* Lange., and *B. tenuissimum* L. Aliens.

Apium graveolens L.

Apium nodiflorum (L.) H.G.Rchb.

The vars. *pseudo-repens* (H. C. Wats) and the stalked not sessile umbelled form *longipedunculatum* (F. Schultz), occur occasionally—possible the result of some cross fertilisation. The true Linnean *repens* has been known since 1877 from the 'line ponds' at Skipwith Common. Var. *ochreatum* (DC.) Castle Howard, W.W., 1879 ; Newbald Springs, C. Waterfall, *fide* W. R. Linton.

Apium inundatum (L.) H.G.Rchb.

Cicuta virosa L.

No new stations and gone from East and West Fen, from Newsham and Ainderby Carrs and from Ibbotson's sites at Kexby and Langwith—the last specimen he brought me from thereabout being in 1870. 'Old Malton Ings,' Baker and Slater's locality, I could never see specimens from.

Ammi majus L. and **A. Visnaga** Lam.

Aliens. Wool brought I believe, Aire and Calder areas.

Carum Carvi L.

Early grown as a crop in the East Riding but purely casual in North and West.

C. Petroselinum (L.) B. & H.

Colonised in two spots on quarry faces and slopes but always originating with outcast garden rubbish.

C. segetum B. and H.

Not seen in North Riding, a single adventive station in West Riding but frequent and natural in Holderness.

Sison Amomum L.

Colonist only in West and East Ridings.

Falcaria vulgaris Bernh. (**Prionitis** Adans.).

Colonist, in one place near Hambleton, where manure from Hull docks is tipped.

Sium latifolium L.

S. erectum Huds. (**angustifolium** L.).

Ægopodium Podagraria L.

Pimpinella major Huds. (**magna** L.).

P. Saxifraga L.

Conopodium majus (Gouan) Lorret and Barr. (**Bunium flexuosum** With.).

Myrrhis odorata (L.) Scop.

Chærophyllum temulentum L.

Scandix Pecten-veneris L.

Anthriscus sylvestris Hoffm.

A. Scandix Beck. (**Chærophyllum Anthriscus** Lam., **Anthriscus vulgaris** Bernh.).

Erase the West Riding. 'First record, Bolton, 1775,' this was *Caucalis Anthriscus*.

Fœniculum vulgare Mill. Alien.

***Cenanthe aquatica* (L.) Poir. (*Phellandrium* Lam).**

***C. crocata* L.**

Additional river basin Lune, in small streams Marthwaite, Sedbergh, J.F. and J.H. !

***C. Lachenalii* Gmel.**

A specimen from Askern, W. Fowler, 1893, shows blunt divisions of root leave, acuter cut above but not true *pimpinelloides* L., this was found again there by C.W., 1906, at Y.N.U. Meeting.

***C. fistulosa* L.**

***Æthusa Cynapium* L.**

***Silaus flavescens* Bernh. (*S. pratensis* Bess.).**

Additional river basin is Nidd, Knaresbro', A. H. Pawson, 1895 ; Plumpton Rocks, P.F.L. !

***Meum Athamanticum* Jacq.**

Only in West Riding ; the North Riding station at Mossdale has not been confirmed recently.

***Ligusticum scoticum* L. and *Levisticum officinale* Koch.**

Have been found as aliens in the West Riding.

***Angelica sylvestris* L.**

***Archangelica officinalis* Hoffm.**

A garden escape by stream running into Upper Lake, Roundhay ; also by Sheepscar Beck, Leeds, 1889-92.

***Peucedanum palustre* Moench.**

Still lingering between Rawcliffe and Thorne, not in North or East Riding now.

***P. sativum* (L.) B. & H. (*Pastinaca*).**

***P. graveolens* L.**

Has occurred on the Wharfe bank, Tadcaster Brewery ! and by Meanwood Beck below a herbalist's garden.

***P. Ostruthium* Koch.**

Not in East Riding.

***Heracleum Spondylium* L.**

The cut-leaved var. *angustifolium* Huds. occurs on deep drift and the var. *glabrum* Koch. on ballast at Middlesbrough.

***H. Mantegezianum* S. & L. (*giganteum* Hoxst.)**

An escape from gardens.

***Coriandrum sativum* L., *Anidrum testiculatum* (L.) O.K. and *A. radians* (Bieb.) O.K.**

Have been found as aliens by cornmills and malting houses.

Daucus Carota L.

The strain *Daucus gummifer* All. has occurred about Speeton and Middlesbrough.

D. pumilus Ball. (*Orlaya*).

An alien on poultry-run waste at Headingley.

Caucalis daucoides L.

Less frequent than seventy years ago when seed was nothing like so 'clean' as to-day. An alien on Calderside and Hull Docks. River bank below Topcliffe Mill, C. M. Rob, 1936.

C. leptophylla L. and C. latifolia L.

Aliens. Hull docks, Calderside and as far as Aysgarth corn mill. One plant of *C. latifolia* at Tanfield Mill in 1937, C. M. Rob & W.A.S.

C. Anthriscus Huds.

C. arvensis Huds. (*Torilis infesta* Spreng.).

An old Casual much less frequent now.

C. nodosa Scop.

The var. *pedunculata* (R. & F.) occurred at Mirfield in 1908, P.F.L.

Tordylium maximum L.

Grain alien.

ARALIACEÆ

Hedera Helix L.

CORNACEÆ

Cornus sanguinea L.

C. suecica L.

Only in North Yorkshire.

C. stolonifera Michx.

The Wighill planting was about 1800. Newton-in-Bowland, J.F.P., 1908. The Tarn Moss, Malham plant recorded in *Flora of West Yorkshire* as *C. alba* is this. In the North Riding about Saltburn plentifully, in the East Riding in Buttercrambe Woods.

CAPRIFOLIACEÆ

Adoxa Moschatellina L.

Further records in the East Riding are Boynton, 1910 ! Heslington just outside York, W. Whitwell, 1882.

Sambucus nigra L.

S. racemosa L.

Planted in woods, Wetherby, Campsall, Nun Appleton and Castle Howard.

S. Ebulus L.

No recent East Riding record. In some plenty in the wood near Sprotborough, Y.N.U. Ex., 1937.

Viburnum Opulus L.

V. Lantana L.

Symphoricarpos racemosus Michx.

Planted or perhaps bird sown. In the East Riding on Church Hill, above Weaverthorpe, and other places in the Great Wold valley, down past Wold Newton by the Gypsey-race, 1909 !

Linnæa borealis L.

Still only North Yorkshire. 'Silpho Moor' (Th'ewes Dike !), and west to Cross Cliff (G. Massee). In my experience, doing well, creeping among *Calluna*, etc., in the shade of the thriving but planted firs in the drier places ; and, *me judice*, undoubtedly introduced with soil at the roots of the 'Aberdeen-shire' fir seedlings.

[This entry suggests that Lees had seen the plant *in situ* on Silpho Moor, but R. J. Flintoff (*N. W. Nat.*, 125, 1936) has failed to find any evidence of the plant having been reformed since Tissiman's original discovery of it there in 1863. Massee's record is based on hearsay and local Scarborough botanists have repeatedly failed to refind it. Other records for Hackness and Levisham are errors. W.A.S.]

Lonicera Peri-clymenum L.

var. *quercifolia* Ait. Burton-in-Lonsdale Woods, Y.N.U., Excurs., 1935.

L. Caprifolium L.

Many more sites are given for this 'denizen' in Baker's *Flora* of 1863, than it exists in, now. Largely planted a hundred years back but gradually dying out now. *L. Xylosteum* L. is more tenacious and survives oftener as Aske Hall (Swale), Baker ! and Cookridge (J.G.W.). The only two continuing (!) stations for *L. alpigena* L. and *L. etrusca* Santi. are given in the *Flora*. *L. involucrata* (Richards) Banks is a later introduction, Woodhouse Moor, Leeds, and Mulgrave Woods.

Leycesteria formosa Wallich

An alien semi-established in the Wetherby and Tickhill areas and at the Old Dam, Adel, in Eddison's Hey.

RUBIACEÆ

Galium boreale L.

Not in East Riding, an extension of range is in Lune, by the river about Sedbergh. Not recorded from Yore, Ribble, or the Greta and Wenning tributaries of the Lune.

G. Mollugo L.

The forms in Yorkshire seem to be the type, which equals *Bakeri* (Syme) of Oxford list, *teste*, Neville Williams, and *umbrosum* (*insubricum*, Gaud.).

G. erectum Huds.

A further record is for Don. Rossington, 1901, H.H.C. ! 'Two well-established clumps in old meadow by the River Torne.'

G. hercynicum Weig. (**G. saxatile**).

G. pumilum Murray (**G. sylvestre** Poll., **G. asperum** Schreb.).

In my West Yorkshire Flora two species or races are included under the *nomen* 'sylvestre'; one, scabrid *pubescent* with dark fruits, the other, more glabro-nitescens with cendré tubercled fruits and called *G. austriacum* Jacq. (*montanum* Vill.). For the restricted *pumilum* I have only Lower Aire and Trent at Ledstone Park and Roche Abbey, but R. Teesdale recorded *G. pusillum* Angl. at Leconfield on glacial drift.

G. austriacum Jacq.

G. nitidulum Thuill. *pro parte major*.

Its headquarters in Yorkshire are on the 'Craven Scars.' Curiously enough—of the east trending valleys—it seems to miss Nidderdale and it is not recorded for the East Riding.

G. uliginosum L.

G. verum L.

The hybrid with *G. Mollugo* (= *G. ochroleucum* Wolf.) has been found at Tanfield by W. Foggitt.

G. tricorne Stokes.

G. saccharatum All.

This occurred at Malton long ago and a specimen in the Medical School Herb. of Dr. J. D. Heaton was localised near Swillington Bridge, July, 1846.

***Galium spurium* L.**

Always in connection with flax crops, is on record for Richmond, Thirsk and Elland ! in the last-named place, a cinder bank by mill on canal side, with *G. saccharatum* and *tricorne*, adventives all. The var. *Vaillantii* DC. is occasional as a casual weed among root crops; Smaw's Wood, Tadcaster !; Seamer Junction (W. Foggitt) !; Newton-in-Bowland, 1912 (Miss Peel). Not on record for the East Riding.

G. Aparine* L.**G. Cruciata* Scop.*****Asperula odorata* L.*****A. cynanchica* L.**

The record in North Yorkshire Flora, at Thorp Arch, is in the West Riding.

***A. galioides* M. Bieb.**

With other aliens, Sandal (G. Roberts) ! Calderside malting houses, 1908 ! *A. arvensis* L. also at Calderside mills (P.F.L.) ! Wakefield, York, etc.

***Sherardia arvensis* L.**

VALERIANACEÆ

***Valeriana* 'officinalis' ! Aggreg.**

V. officinalis L. restricted (*V. Mikanii* Syme). In dry beech woods, Maltby ! and Broughton ! The drier coppices of Ledstone Park ! (S.M.).

V. sambucifolia Mikan. (*V. officinalis* of Flora). General in damp woods and by ditches.

V. dioica* L.**Kentranthus ruber* (L.) Druce.**

Alien. The chalk pits at Hessele, in the East Riding, is the only place where it is at once abundant, quite naturalised and maturing its fruit.

Valerianella olitoria* Poll.**V. carinata* Loisel. and *V. eriocarpa* Desv.**

Have been reported as casuals, the former at Harrogate, 1891, J.F. !

V. dentata* (L.) Poll.**V. rimosa* Bast. (*Auricula* DC.).**

(To be continued).

A NEW BOOK APPERTAINING TO THE ANCIENT
CITY OF YORK

A YORK MISCELLANY

Compiled from records
of the past four centuries

BY

I. P. PRESSLY, M.A.

ILLUSTRATED BY

ELLEN M. McLANE

286 pages, Crown 8vo, with 24 Illustrations in Black and White, and 9 Photographic Plates. Cloth Boards, Gilt Lettering.

6/- NET.

Following much painstaking research work, the author of this book has succeeded in providing a truly kaleidoscopic representation of life in York during the past four centuries. The important part that the City has played in the history of England is clearly shown, and the reader is brought into intimate contact with many famous personages of their times. Altogether, it is an intensely interesting portrayal that should make a strong appeal to young and old alike, and the addition of plates and sketches is a feature that adds considerably to the attractiveness and to the historical value of the book.

Obtainable from all booksellers

A. BROWN & SONS, LIMITED

5 FARRINGDON AVENUE, LONDON, E.C.4

And at HULL



Reduced Reproduction of Plate IX.

AN
ENTIRELY
NEW
PUBLICATION

BY
H. A. LEA
National Association of Swimmers
Instructors

WITH FOREWORD
BY
FRED G. MILTON
Five Times English Champion

120 pages, Crown 8vo.
20 full-page plates,
cloth boards

3/6 net

SWIM LIKE A FISH

HOW TO BECOME AN ALL-ROUND SWIMMER

This book will prove a real boon to those countless thousands of people who are possessed of that inherent desire to "swim like a fish." Every branch of the great pastime, including the art of diving, is most carefully explained, step by step. The many explanatory diagrams, and the full-page photographic plates show what to do, and, in certain instances, what not to do. All who are prepared to put into practice the teachings contained in this book will achieve their ambition of becoming expert swimmers.

Obtainable through all Booksellers



DIAGRAM 90—Tandem Back Crawl.

LONDON: A. BROWN & SONS, LTD., 5 Farringdon Avenue, E.C.4.

Printed by A. BROWN & SONS, LTD., Perth Street West, Hull, and published by
A. BROWN & SONS, LTD., at 5 Farringdon Avenue, in the City of London.

The NATURALIST

A MONTHLY
ILLUSTRATED JOURNAL
PRINCIPALLY FOR THE NORTH OF ENGLAND

Edited by

H. PEARSALL, D.Sc., F.L.S., and W. R. GRIST, B.Sc.,
The University, Leeds.

with the assistance as referees in special departments of

H. B. Booth, F.Z.S., M.B.O.U.

J. M. Brown, B.Sc., F.R.E.S.

W. H. Burrell, F.L.S.

Chris. A. Cheetham, F.R.E.S.

W. J. Fordham, M.R.C.S., L.R.C.P.,
D.P.H.

Riley Fortune, F.Z.S., F.R.P.S.

Professor A. Gilligan, D.Sc., F.G.S., M.I.M.E.

Mrs. Elsie M. Morehouse.

Thos. Sheppard, M.Sc., F.G.S., F.Z.S.

T. W. Woodhead, Ph.D., M.Sc., F.L.S.

Contents

PAGE

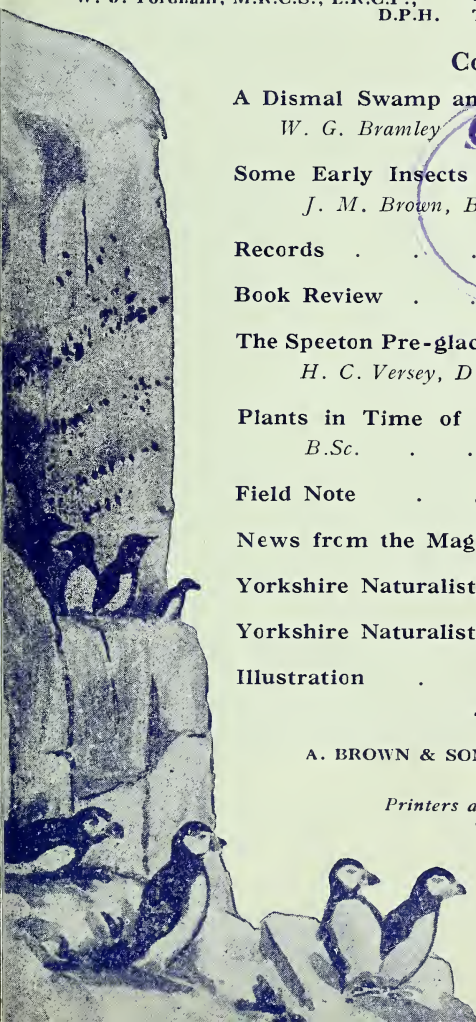
A Dismal Swamp and its Avian Problems— W. G. Bramley	221-225
Some Early Insects near Sheffield (1938)— J. M. Brown, B.Sc.	225
Records	226
Book Review	226
The Speeton Pre-glacial Shell Bed (illustrated)— H. C. Versey, D.Sc., F.G.S.	227-229
Plants in Time of Drought—E. G. Highfield, B.Sc.	230-231
Field Note	231
News from the Magazines	232
Yorkshire Naturalists in Upper Nidderdale	233-236
Yorkshire Naturalists at Pickering	237-244
Illustration	227

LONDON:
A. BROWN & SONS, Ltd., 5 Farringdon Avenue, E.C.4,
And at Hull.

Printers and Publishers to the Y.N.U.

PRICE 1/6 net.

Prepaid Subscription
15/- per annum.

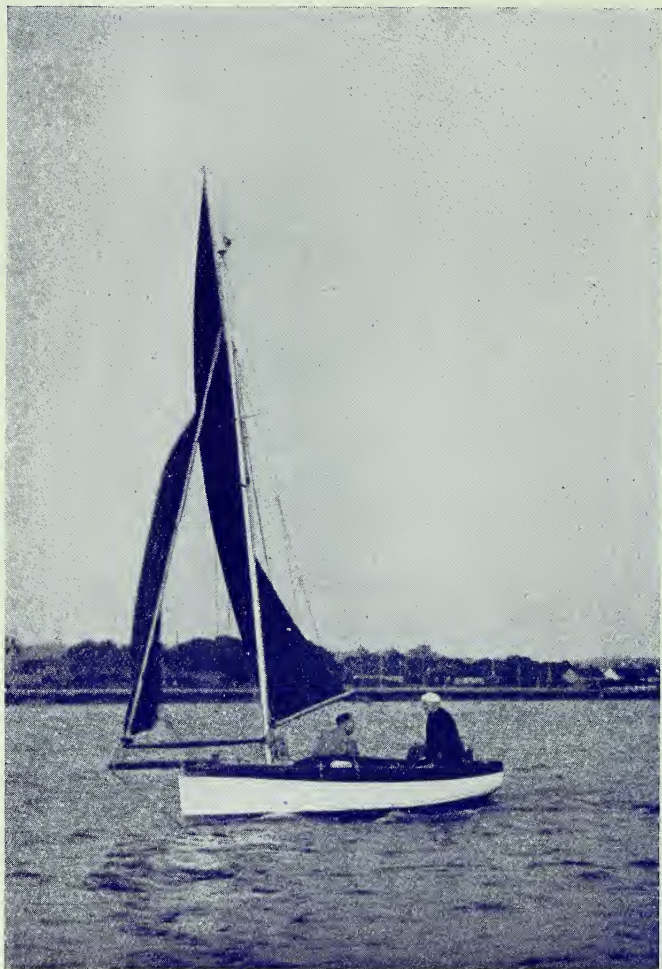


A book that will be appreciated by Yachtsmen and by all who
love the sea.

SPARE TIME SAILING

Being a record of forty years' Sailing and Cruising experiences off
the North-East Coast and on the Humber Estuary and North Sea.

BY
HERBERT WOOD



LINNET

75 pages + x, 7½" × 5", with 10 full page Sketches and Maps, and 9 full page Plates,
bound in Vellum Cloth Boards. Price 3/9 net. Post free 4/3 net.

Obtainable through all Booksellers.

LONDON : A. BROWN & SONS, LTD., 5 Farringdon Avenue, E.C.4.

A DISMAL SWAMP AND ITS AVIAN PROBLEMS

W. G. BRAMLEY

THIS paper was originally read to the Vertebrate Section of the Yorkshire Naturalists' Union on October 28th, 1933. Since that time I have not been able to visit the area except on very irregular and infrequent occasions.

Some years ago a correspondent in the *Yorkshire Post* described the flooded lands in the mining areas as the 'Dismal Swamps of Yorkshire.' While this description may suit some of them, one with which I am familiar can by no means be described as dismal, though there is no doubt as to its being swampy.

This sheet of water, which is not without its beauty, and is a notable feature of the landscape, lies between the River Aire and the road leading from Fairburn to Castleford, and is of recent occurrence, and is not marked on any of the pre-War maps. It extends to a length of well over a mile and varies in width from a quarter to three-quarters of a mile. The depth is not very great, averaging about three and a half feet, many parts being much less. Some danger lies in wading, due to the old dykes and drains, some of which were of considerable width, these being now filled with mud two or more feet deep. The bottom of the remainder is firm, with only a slight covering due to the decaying vegetation.

Even before the advent of coal-mining, the area was more or less subject to flooding, but this condition soon abated on the lowering of the river, the area being well served with adequate drains. After the opening of the colliery just over the river, the coal was won from under the land and further afield, and subsidence began to make itself felt. At first the flood water was longer in getting away and the ground remained longer in a wet condition. Eventually, the lower-lying parts became waterlogged, and later formed permanent pools.

With the advent of wetter soil conditions, changes took place in the vegetation of the rich feeding pastures. Rushes and reeds began to establish themselves and species of grasses more suited to dryer conditions were gradually drowned out.

As the coal face proceeded further and further from the pit bottom, so did the effects of subsidence make themselves more and more felt and gradually larger areas became permanently under water. This process is continually going on and the changes from feeding grassland into swamp and lake can be found in all stages.

At the Fairburn end of the lake an island of some two or three acres rises a few feet above the level of the water. The field in which this elevation occurs was known as the 'Priestholm.' It is now covered with a thick tangle of reeds (*Phalaris*) and coarse grasses. The other and wider end is dotted with

beds of bulrush and iris with patches of equisetum. The remains of dead hedges mark the old field boundaries of the days when cattle fed on the lush ingras grass.

The water is kept sweet and fresh by the dykes which drain the surrounding country, but chiefly by springs. One of these springs supplies the two neighbouring villages with their water supply and has an output of several thousand gallons a day. The outlet is into the river by means of sluice valves and at the present time the level of the water only rises when the level of the river is such as to close the valves.

To-day this dismal swamp forms an ideal spot for the bird watcher, bounded as it is on the one side by the highway and on the other by its only dismal feature, the thirty-foot floodbank of pit waste which separates it from the river. Before this bank was commenced, about 1922, heavy rains at the head of the valley frequently caused the river to overflow its banks, resulting—in summer floods—in the destruction of many nests. As a result of the road on the one side and workmen on the floodbank at the other, the birds frequenting the lake are not disturbed by passers-by and can be approached fairly closely.

During the years 1920 to 1926 I was able to pay frequent visits to this area and obtained a good idea of the birds that inhabited it. Since then my visits have only been casual. Two visits in 1933, on May 28th and June 25th, were notable for the changes in certain aspects of the avifauna which had taken place.

Perhaps the change that struck me most was the status of the Sedge Warbler. Previously this warbler was one of the commonest small birds and could be heard and seen all round the mere, wherever a few tufts of rushes, willows, or long vegetation afforded sufficient cover for its nest. In 1933 the birds were scarce and not above a dozen were seen or heard on the two visits. The Reed Sparrow was also apparently absent, although one or two were seen on a later visit in August. Previously, Reed Sparrows, though not numerous, could be generally met with throughout most of the year.

A small colony of Reed Warblers which used to haunt a small willow grove, has also forsaken its usual haunt. This was no doubt due to the encroachment of the floodbank, which had covered at least half of its site. This colony generally, made their nests in the willows up to ten feet from the ground.

The most remarkable feature in the bird life of this sheet of water is the great increase in the numbers of the Great Crested Grebe during the period I was unable to watch. Up to 1926, half a dozen pairs that managed to rear an average brood of two was a good year. On May 28th, 1933, however, I had the experience of having ten of these exquisite birds in the field of the glasses at one time, while many others were scattered on other parts of the water. Nests did not appear

to be numerous, but a detailed examination by boat and wading is necessary to get anything like a correct estimate of the nesting numbers, although many can be seen from the top of the floodbank. The behaviour of many of the birds on this date did not seem to indicate that they were nesting, but like the males of the ducks, they may have been a 'grass widowers' party. A further visit was paid on June 25th with Mr. E. W. Taylor, but the promise of the previous visit was not fulfilled, and we saw but few old birds and a fairly thorough examination by boat and wading only revealed five nest with eggs. Two or three broods of young were also noted. A later visit on August 27th indicated that the birds were still fewer, and a careful examination from the floodbank only revealed a dozen birds, old and young. On this water the Great Crested Grebe is absent from the end of October to about the middle of February.

The Little Grebe is a resident, though at one time I was under the impression that it also left during the winter. In cold spells, when most of the water is frozen, they do probably all leave. Their small size makes them difficult to detect when there is a ripple on the water, as this condition appears to make the birds float lower in the water. On October 21st, 1923, I witnessed a curious incident concerning one of these birds. Watching a Little Grebe on a mudbank, 'It suddenly assumed an upright pose and commenced flapping its wings sharply. It did this two or three times, then on resuming it started to run forward and began to fly. After flying about twenty yards, the bird dropped in the water and swam back to the starting point, and did the same thing, but this time without any preliminary flapping. I watched it do this at least four times when another bird swam up and joined in the same game, the latter being an adult bird. Was the first grebe learning to fly?'

The only other Grebe seen is the Slavonian *P. auritus*, noted for a few days in February, 1926.

Another bird which has increased of late years is the handsome Shoveller Duck, and there were at least a dozen pairs, or at any rate a dozen drakes, dotted about the mere this year (1933). Some of the other ducks are, however, decreasing, and this applies to the Tufted and Pochard. Whether there is any connection between the increase of the Grebes and the decrease of the ducks is obscure, and will require many facts from several branches of natural history.

A few notes on the ducks may be of interest.

TUFTED DUCK. My notes are, unfortunately, not as complete as I should now like them to be, and I find but few definite notes on the estimated number of breeding birds. In 1925 my record is 15 to 20 pairs: 'not so numerous as last

year.' During the winter months all the breeding species of duck are augmented by immigrants. The Tufted is no exception, and I have seen over 100 of these birds. The contrasting black and white of the males renders them easily visible, but the females and young are apt to be overlooked.

POCHARD. The usual breeding population was from 10 to 20 pairs with a big influx in winter, which would bring the numbers up to 150 to 200 birds in a good season. An interesting fact was noted in 1925 that the Pochard is the last duck to return on the thawing of the ice after a sharp spell of frost.

MALLARD. Several pairs breed either on the margins of the lake or further inland, in the latter case leading the young to their natural habitat. Their numbers are also augmented in winter and they often remain when the water is ice covered. There is always an area of an acre or two which I have never seen covered with ice and this is crowded with Coots, Swans, and Ducks.

TEAL. This duck is very sparingly distributed in summer, but some winters find considerable numbers on the water. On the wing their size and rapid flight render them easy to distinguish. In other winters they are few in number.

Wigeon arrive every autumn about the end of October and may stay in varying numbers to the beginning of April. Their numbers vary considerably even during one winter, and movements are always taking place. As with other species, fresh arrivals are wild and shy, but soon become used to the traffic on the road and workmen emptying waggons on the floodbank. The largest number of Wigeon I estimated at 250 to 300 birds newly arrived on October 26th, 1924.

Two pair of Pintails stayed for a fortnight in December, 1922, and a female Smew brought for identification on January 16th, 1924, are the only other ducks I have any record of.

A feature of the mere is the colony of Black Headed Gulls. These are also decreasing and from the many hundred pairs are now (1933) probably less than 100 pairs. Although these charming but loquacious birds add to the beauty of the scene, any large increase in their numbers is not desirable. Beside the fouling of the water, their well-known penchant for any eggs they can pick up does not make the gulls desirable neighbours for the other inhabitants.

The Coot is the dominant member of this community, both in numbers and pugnacity, as he bullies any bird that gets in his way, the lordly swan being the only one to escape. Round the reedy margins Waterhens skulk, seeking their food in the shallower water away from the bustle of the more thickly-populated portions of the water.

In the areas round about which are still fairly dry and covered with dense growths of rushes, sedges, and semi-aquatic

grasses, a few pairs of Redshank find a suitable breeding haunt, and their melodious whistle adds one more charm for the bird lover. A few pairs of Snipe keep them company and the latter are augmented in winter by arrivals from other lands.

Lapwings are by no means numerous in the swamp itself during the breeding season, as they seem to prefer the drier arable land for incubation purposes. Large flocks occasionally appear in the dead season and one flock would contain upwards of 2,000 birds.

Although flocks of up to 150 Canada Geese frequently visit this sheet of water, none have so far remained to breed. Two or three pairs of Swans breed, but are much persecuted, the eggs being frequently taken. There are generally also a number of immature and non-breeding Swans sometimes numbering up to a score, whose presence adds one more puzzle to the number already set by this 'Dismal Swamp.'

SOME EARLY INSECTS NEAR SHEFFIELD (1938)

J. M. BROWN, B.Sc., F.L.S.

It may be of interest to compare the dates of appearance of some of the early insects as seen this year with those of last year (*Naturalist*, 1937, p. 146), bearing in mind the difference in the weather during these two seasons.

On January 6th, *Hemerobius stigma* was beaten from Scots Pine on Blacka Moor—this, however, is a species which hibernates in the adult state. This also applies to *Trioza urticae*, *Aphalara calthae* and *Chlorita flavescens* obtained from Scots Pine and Spruce in Ecclesall Wood on January 13th.

My earliest Stonefly was *Leuctra fusciventris*, a precocious male appearing by Limb Brook (Ecclesall Wood) on January 18th, where *Capnia nigra* (usually our earliest species) occurred on January 31st, but was not noticed again until February 14th. *Leuctra hippopus* occurred in Padley Wood on March 5th, and *Protonemura meyeri* and *Leuctra hippopus* at Wyming Brook on March 7th. *Capnia vidua* was not seen in Padley Wood till March 8th, and became fairly numerous by March 11th, on which date my first Caddis-fly, *Philopotamus montanus*, was seen here.

The earliest Mayfly seen was *Baetis rhodani*, observed flying by the stream in Ford Valley on March 17th.

On March 12th, the Tiger Beetle (*Cicindela campestris*) and the Heather Beetle (*Lochmaea suturalis*) were seen on Blacka Moor in small number, and in plenty on April 8th, and also at Wyming Brook on April 11th.

Of Butterflies, the Green Veined White occurred at Woodseats on March 13th, while the Small Tortoiseshell and Brimstone were seen at Wyming Brook on April 11th.

RECORDS

SHOOTING OF TAWNY OWLS, ETC., NEAR SCARBOROUGH

At the Scarborough North Riding Police Court on June 9th, the Royal Society for Protection of Birds, acting on behalf of the Wild Birds' and Eggs' Protection Acts Committee of the Y.N.U., summoned a middle-aged gamekeeper for having shot nine Tawny Owls at Hackness between March 27th and April 19th last. The man admitted killing the Owls, but pleaded ignorance of the law, and said that he did not know that he was doing wrong. Unfortunately we had a very cute lawyer against us, who could not see any possible chance of winning the case, so he went boldly in for getting it dismissed—and succeeded. The Chief Constable of the North Riding said that he believed the man had acted in ignorance and thought that a warning in this case was sufficient. Imagine what would become of a business man or a motorist who pleaded ignorance of the law in court? In addition to the 9 Owls this same man had shot 16 Carrion Crows, 14 Magpies, 2 Jays, 2 Sparrow Hawks, 4 Weasels, 2 Hedgehogs, 1 Stoat, and 4 Grey Squirrels! Surely almost a record for the destruction of wild life in about a fortnight. Anyhow, this case will have done good, and a second culprit will not get off so lightly. The Committee is much obliged to Mr. A. E. Peck and other Scarborough friends for bringing the facts of this butchery into the daylight.—H. B. BOOTH (Chairman, W.B. and E.P.A. Committee).

THE COLEOPTERA RECORDS OF THE LATE MR. M. L. THOMPSON

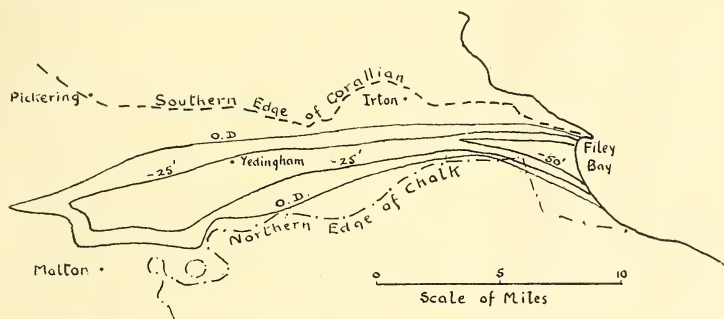
WE are glad to hear that the records compiled by the late M. Lawson Thompson, of Middlesbrough, have been sent to the Chairman of the Coleoptera Committee, Mr. Geo. B. Walsh, B.Sc., of Scarborough, through the kindness of Mr. T. A. Lofthouse, of Middlesbrough, to whom our grateful thanks are due for thus making them available to Yorkshire workers in this subject.—C. A. C.

Bird Flocks and the Breeding Cycle, by F. Fraser Darling, pp. X+124. Cambridge University Press. 6/-. It may be said that ornithology is now being widely studied as a serious biological science. Dr. Darling's book is an important contribution to this science and should be read and studied by all who take bird-watching seriously. The author has made a detailed study of the habits of flocks of sea-birds with special reference to the breeding cycle. The most important conclusion arrived at is that among flocking birds there is a very definite connection between population density and success in rearing young. When the population of a colony falls below a certain minimum, the *relative* number of successfully reared young falls, and where this state of affairs obtains in all breeding areas of the species, extinction is threatened. In so far as mating, nesting, and rearing young is concerned, Dr. Darling suggests that 'visual and auditory stimulation' is a most important factor of success, and the vigorous, well-populated colony therefore supplies the best conditions for reproduction of the species.

THE SPEETON PRE-GLACIAL SHELL BED

H. C. VERSEY, D.Sc., F.G.S.

SINCE the discovery of this bed by Phillips in 1855, it has been the subject of much controversy among glacial geologists. Sections, more complete than those observed by Phillips, were seen by the late Mr. Lamplugh¹ and described by him in 1881. According to that author a section below the Drift and above the Speeton Clay reveals 14 ft. of a dark clayey sand with fossils, covered and underlain by chalky gravel. The sand was considered by Lamplugh to represent a muddy flat, formed by receding tidal waters in the mouth of a quiet estuary, of an age between the Red Crag and the beginning



of the Ice Age. On New Closes Cliff it is found at a height of about 80 ft. above O.D., but a similar bed only 2 ft. thick is occasionally seen near Reighton Gap where it still maintains the distinction between top and bottom seen in the principal section. The controversy has centred on this difference of height and on the possibility of the bed being a transported mass.

Recent investigations by the present writer on transported masses of sand in the Basement Clay led him to apply similar methods to this rock.

Under the microscope the rock consists of small angular grains of quartz, of very uniform size, set in a matrix of ferruginous clay. The action of acids proves an appreciable amount of carbonates, but those do not show up under the microscope. Felspars are occasionally seen, while rounded masses of glauconite are quite common. Iron oxides are frequent, showing sometimes a square outline suggesting limonite pseudomorphs after pyrites. Shell detritus is infrequent, but one or two foraminifera are seen. Some rounded masses of calcite may be calcispheres. The microscopic

¹ *Geol. Mag.*, 1881, p. 174.

character of this clayey sand is quite comparable to that of the mud of the Humber Estuary and bears out Lamplugh's inference as to its origin.

When treated with heavy liquids it reveals an interesting crop of minerals. The principal non-opaque minerals are hornblende, garnet, zircon, apatite, biotite, tourmaline, kyanite, staurolite, rutile, epidote, monazite, hypersthene, chlorite, and glauconite.

This assemblage of minerals is very similar to that recorded from the boulders of sandstone with Pholas found in the Basement Boulder Clay.¹ It is unlike that obtained from any local rock, both in the minerals present and the varietal differences they show. As shown in the paper referred to, the minerals strongly resemble those found in the Basement Clay itself and thus a source in Scandinavia or the floor of the North Sea must be sought.

The Tertiary beds of East Anglia probably extend into the North Sea, but the paucity of important southern minerals like kyanite renders it improbable that they contributed much to the deposits under examination. The Chalk extends across the North Sea into Denmark and the Baltic Islands and contributed much to the boulder clays. This rock, although containing detrital material, is unlikely to be a source of the minerals in either the Pholas sand or the Speeton Shell Bed. Tertiary rocks, which may be of Scandinavian origin, occur in Denmark, but are principally of a clay facies. Although the Jurassic rocks of Yorkshire show evidence of a northerly derivation their heavy residue is totally unlike that given above. The minerals in the Shell Bed are all of such types as to suggest either one cycle of erosion or, if more than one, that the agents and conditions of transport were such as to reduce chemical decomposition to a minimum. A Scandinavian origin for the minerals seems the only possible one from the evidence available and water transport alone could not have brought them all that distance and kept the susceptible minerals so fresh. The writer suggested that the Pholas sand represented the outwash material from some sheet of Boulder Clay belonging to a glaciation preceding that producing the Basement Clay and it is necessary to see how the Speeton evidence bears on this view.

Immediately under the Shell Bed is a gravel with fragments of White and Red Chalk with broken Speeton Clay fossils. The formation of such a gravel generally implies the previous freezing of the chalk for otherwise running streams over chalk are exceptional. It is true that the locality is near to a steep chalk escarpment so that the gravel might be scree

¹ *Trans. Leeds Geol. Assoc.*, Pt. XX, pp. 17-23.

material, but it is remarkable that no similar material is found intercalated in the Shell Bed, which from the lithology must have taken a long time to be deposited, and still more striking that more chalk gravel should have been accumulated immediately after deposition of the Shell Bed to a depth of 6 ft. The lower gravel indicates, in the writer's opinion, a reduction of temperature sufficient to freeze the neighbouring chalk and may be associated with the suggested glaciation, the deposits of which did not reach the British coast. Following the glaciation was a more genial period during which the Shell Bed, the sands with *Pholas* on the North Sea floor and the blown-sand at Sewerby were accumulated. This was followed first by alternations of temperature allowing the upper gravel to be formed and then by the impingement on the British Coast of the ice of the Basement glaciation.

The position of the Shell Bed and its associated gravels under the Boulder Clay, the absence of any disturbance of the stratification and the presence of shells with valves in apposition collectively rule out the possibility of its being a transported mass, the only fact that might be adduced to support such a transport being the variation in height shown at Speeton and Reighton. The evidence brought forward earlier that the Shell Bed is of the same age as the Sewerby blown-sand, etc., leads to the corollary that when originally deposited, it was at a level not far removed from the present sea-level. It must, therefore, owe its present elevation to subsequent uplift and it may be pointed out that, as noticed first by Phillips, the exposure on New Closes Cliff is immediately above the contortions in the Speeton Clay. The force producing these contortions, whether by the pressure of the adjacent chalk hills or ice-pressure could well have produced the elevation. The exposure at Reighton Gap is near the base of the cliff, but it would be unwise to assume this to be in its original position for the section is never very clear and extensive slipping has taken place on this cliff.

Assuming that the Shell Bed was deposited at a level approximating closely to present sea-level, the geography of the district may be reconstructed. The glacial beds in the district have been pierced by a number of borings and the level of the pre-glacial floor may be found. Glacial erosion may be discounted as the ice, on entering the Vale of Pickering, was in the region of dissipation and where deposition took place.

West of the Wykeham moraine erosion is still less likely and the level of the solid rocks under the lacustrine beds gives the pre-glacial level. The accompanying map shows the probable bathymetry of the Vale of Pickering estuary at the time of the Speeton Shell Bed.

PLANTS IN TIME OF DROUGHT

E. G. HIGHFIELD, B.Sc.

DROUGHT in this country is rare and the majority of plants have no special contrivances for resisting its effects. When a long spell of drought does occur they are put to very severe tests of endurance and have to make special responses to meet the conditions. The years 1911, 1921, and 1933 were periods of very acute summer drought, and in 1933 I kept full notes and was able to confirm and check observations made in the earlier periods. The drought of 1938, however, came in the early spring—February to May—and in observing the effects it soon became apparent that the line of response was different from that previously noted.

The summer drought, coming after a normal spring, catches the plants with their full output of leaves, and the first response is the reduction of transpiration. Large leaves are withered off and replaced by small newly-grown leaves. This change necessitates reduction of photosynthesis, and, consequently, food storage is light. Herbaceous plants rush rapidly to bloom and the setting of seed and then close down early for the season. They are not permanently affected except that they have not got a very ample food storage for starting next season's growth. Summer drought is most critical with trees. The life of a tree resides in the winter buds, and if the sap current cannot be maintained the buds perish and the tree dies. After each of the long summer droughts a number of dead trees were to be seen in the following spring : beech, ash, and holly seem to be the most vulnerable. Another most marked effect is that summer drought causes abundant blossom in the following spring. This fact was noticed in 1912 and 1922, and was amply confirmed in the great blossom year of 1934.

The spring drought of 1938 started at the beginning of February and held up to the 12th May. During this long period in North-east Yorkshire there was only about a quarter of an inch of rainfall. Abnormal effects on plant life only became apparent towards the end of March and during April. By that time it became evident that plants were not responding in the way they do in a summer drought. Everything remained vividly green ; grass and trees encouraged their leaves but blossom was sacrificed. In the woods the spring flowers faded quickly and set very little seed ; lilac, laburnum, sycamore, and chestnut were dropping their unopened flower buds. In time of famine animals cannot rear their young, and it was now this way with the trees ; they had expended their food storage in putting out the new leaves and shoots and there was nothing left to develop the flowers. The leaves must be saved at all

costs because they are the means of manufacturing new food and making the buds by which the life of the tree is continued.

My observations have been mainly about plants, but a few notes on the behaviour of animals may be instructive. There is no doubt that round about the end of April was a time of famine—worms went down very deep and returned to a state of hibernation, snails never came out from hibernation until after the rains in May, frogs and toads spawned early in March but not very profusely, and reports have been made of toads which have been spawning in May. Probably some of the animals never came out of hibernation during the drought. Birds were hard pressed for food and many nests were abandoned when the eggs were on the eve of hatching; rooks raided the nests of plovers to eat the eggs.

When the rain came the response in plant growth was very rapid. Trees which have dropped their flower and have no fruit to mature are now making very strong vegetative growth. There is, however, no reason to suppose that the spring drought will have any effect in stimulating abundance of blossom next year.

As might be expected, some of the weaklings and rarities have suffered most. Orchids, such as the early purple, the fly, and the frog, have had a very bad time, both in leaf and in flower, and many plants have perished. Common and hardy plants never showed any sign of being in difficulty. While spring flowers languished the dandelion had a magnificent season and bloomed and set seed profusely.

FIELD NOTE

The Great Crested Grebes at Malham Tarn (A CORRECTION).—In my West Riding Ornithological Report for 1937 I stated that the pair of Great Crested Grebes did not return to Malham Tarn at all this year (*antea*, p. 30). My second and last visit to this tarn in 1937 was on May 30th, when the Grebes were not about and had not been seen that season. Mr. Usher, the head gamekeeper there, now informs me that very curiously they turned up on the very evening of the day that I was there, and although the date was so late (May 30th) they successfully reared a brood. Probably they had been disturbed or robbed at some other site; or it may have been that the water receded and left the nest high and dry, as so often happens on our reservoirs. This year they arrived at their normal time in March, and have nested. I saw them feeding fairly large young out on the Tarn on July 3rd. The pair at Chelker Reservoir have this season given up the attempt to nest; probably owing to the drought and low water, and have left the reservoir for several weeks now (July 3rd).—H. B. BOOTH.

NEWS FROM THE MAGAZINES

The Entomologists' Record for June contains 'Lepidoptera at Cavalaire, Var, France, in April, 1937,' by W. Fassnidge; 'The Cumberland Chrysomelidæ,' by T. F. Marriner; Scientific Notes and Notes on Collecting; and supplements, 'The British Noctuæ and their Varieties,' by H. J. Turner; and 'Variation of Butterflies in Anterior Asia and Morocco,' by R. Verity.

The Entomologist's Monthly Magazine for July contains 'Check List of the Collembola of Oceania,' by E. Handschin, 'The Parasites of British Birds and Mammals, XX. The Ecto-parasites of the House Martin, Swift, Swallow, and Sandmartin,' by G. B. Thompson; 'Some Lymantriidae from Abyssinia,' by C. L. Collenette; '*Laphria gilva* L. in Windsor Forest: a Dipteron new to Britain,' by K. G. Blair; 'The Tachinidae of the Meade Collection,' by C. J. Wainwright; 'On Some European Species of *Chirothrips* (Thysanoptera),' by J. D. Hood; 'A Preliminary List of the Coleoptera of Windsor Forest,' by H. Donisthorpe, and two shorter notes.

The Entomologist for July contains '*Aplasta ononaria* at Folkestone,' by A. M. Morley; 'An Annotated List of Species of Hemiptera Heteroptera not hitherto recorded for Middlesex,' by D. C. Thomas; 'A new Subspecies of *Leptidea duponcheli* Stdgr.,' by P. P. Graves; 'The Life Story of *Apatura iris*,' by S. Morris; 'The Identity of *Acosmetia morrisii* Dale. (in Morris),' by H. M. Edelston and W. H. T. Tarns; and several notes and observations.

The Transactions of the Society for British Entomology, Vol. 5, Part W.2, consists of 'A Revision of the British Species of the Genus *Hygrocryptus* Thoms. (Hym. Ichneumonidae Cryptini.),' by G. J. Kerrich (*Hygrocryptus brevispina* Thoms. new to Britain from Cambridgeshire and Dorset and five other species); Vol. 5, Part 3, 'A Revision of the British Sawflies of the Genus *Empria* Lepeletier (Hymenoptera Symphyta.),' by R. B. Benson (including two species new to science, *Empria alpina* Benson from Perthshire and *E. alector* Benson from Herts., Bucks., Devon, and Lancashire, also several localities in Ireland); Vol. 5, Part 4, 'Some Relations of British Coleoptera to Their Environment,' by G. B. Walsh. This paper deals chiefly with the effects of drought. The insect possesses no power, automatic or otherwise, of regulating the rate or extent of loss of water in any way comparable to that possessed by plants by means of their stomates, but these are determined solely by the insect structure and by the conditions of the environment. In every case dead specimens lose water at a quicker rate than do the living ones, and in most cases the difference is very marked. The occurrence of wind materially increases the rate of transpiration of beetles. For the living beetle the loss of weight in any given time depends upon the temperature, the hygrometric state of the air, the presence of wind and the length of exposure to these conditions. Under drought conditions the loss of water is least and the length of life greatest in those beetles which are xerophilous, the mesophiles suffer a great loss of water with consequent briefer life, while those from damp wet habitats are in most cases badly fitted to withstand dry conditions. The size of the elytra does determine the rate of loss of water from the insect body. Beetles where the elytra are in close fixed position to the body have only a slow rate of loss of water, e.g. most of the sandhill beetles, many of the weevils, and a few water beetles. In the sandhill beetles there is a marked power of resistance to drought.

My Garden for August is an excellent shillingsworth. Among about twenty well-written articles are 'The Garden of Eden,' by R. A. Foster-Melliard; 'The Rock Garden of the Future,' by Frances Boon; 'The Taller Evening Primrose,' by Michael Vaughan; and 'Dwarf Phlox,' by Ralph Aldersley. There are many excellent photographic illustrations and one in colour of *Dianthus glacialis*.

YORKSHIRE NATURALISTS IN UPPER NIDDERDALE

May 14th, 1938

A WET day reduced the attendance very considerably, which was unfortunate as Upper Nidderdale offers many side gills that the Union has still to explore. On this occasion Dauber Ghyll and Cow Close Wood were visited and then the shore of Gouthwaite Reservoir. At the meeting at Ramsgill in the evening Mr. W. E. L. Wattam was in the chair, and cordial votes of thanks were given to Mr. T. F. Brewster and to the Chairman of the Bradford Waterworks Committee for the permissions given to us to visit this area.

Ornithological Notes.—Mr. J. P. Utley writes : Although rain was almost universally welcomed, on this particular day it did somewhat hinder observations for all concerned ; the only people who seemed generally pleased with things were the bryologists.

I spent up to lunch time alongside Gouthwaite Reservoir, and in the afternoon moved up to Scaur House and Angram Reservoirs, but up here conditions were appalling ; the rain was heavy indeed, and the gale was lashing the waters of Angram in particular into fury.

The majority of our common birds were to be found, but a few observations may be a little out of the ordinary. On Gouthwaite four Great Crested Grebe were seen well to the centre of the reservoir. Mallard and Teal were fairly numerous, a number of the former tending young ; also a few pairs of Tufted Duck were seen. One Mute Swan was at the western end, but here on the mudflats and shingle I am glad to record several pairs of Ringed Plover, and I was assured that this bird definitely breeds here. Curlew, Golden Plover, Lapwing, Redshank, Snipe, and Sandpiper were common, and considerable numbers of Dunlin were feeding at the water's edge. Black-headed Gulls were fairly plentiful, and these, I understand, breed regularly. A few Herring Gulls were seen. Swifts (first occurrence this year I was told), Swallows, House Martins, and Sand Martins were all in evidence over the water.

On moving up the dale I made numerous excursions to various points on the river and into the woodland and pastures. By the river above Lofthouse I put up two Herons, but these birds are more numerous in the upper reaches of the dales during the trout spawning season. Here, too, I came across an occasional Dipper, but they are not so common as in some other dales. A few pairs of Grey Wagtail were seen, while in the upland pastures odd pairs of Wheatear were found and one pair of Ring Ousel was seen. Of the Warblers, the Lesser Whitethroat was almost as common as the Willow Warbler. Miss Allison reported seeing the Sedge Warbler and Mr. Cheetham the Blackcap.

Scaur House and Angram yielded nothing but the common Moorland Waders, but up in these higher regions were the most brilliant plumaged Yellow Wagtails it has been my privilege to see. Mr. Jukes, of Scaur House, upon whom I called, also declared this brilliance as being unusual. Scaur House and Angram reservoirs are new and may have a better bird population in a few years.

The only bird of prey I saw was a Sparrow Hawk that nearly collided with me as he came round the corner of a plantation with his customary dash. There was a noticeable scarcity of Rooks, while Jackdaws, Magpies, and Jays appeared to be absent. Carrion Crows were more common than is usual in the dales. Cuckoos were plentiful, so were Meadow and Tree Pipits. Although there appeared to be suitable haunts, the Tit family were very few in number and scattered ; the Great Tit

and Blue Tit were the only varieties seen. A few Golden Crested Wren were seen.

Finches were not common, Greenfinch and Yellow Hammer being few in numbers. An occasional Redstart was seen, but no Stonechat or Whinchat came to my notice.

Flowering Plants.—W. E. L. Wattam writes: Doubtless the ecological features of Dauber Ghyll, on the outskirts of the village of Wath, is typical of the numerous ghylls which have been eroded out of the rocks of the millstone grit series to the right of the valley coming towards Gouthwaite Reservoir. This particular ghyll at first opens out into a wide arena in which have been deposited rocks of varying size with silicious deposits, and then gradually narrows to a large rock escarpment over which the stream tumbles into the wider portion of the ghyll. The tree flora is chiefly sycamore and beech, with an admixture of ash, oak, birch, and alder. In places the rhododendron has been planted. The summit ridge to right is crowned with spruce and a few Scot's pine and larch. To the left the deciduous trees predominate, and where open glades occur the dominant flora is an association of bluebell and bracken with a small amount of Holcus. Wood anemone, lesser celandine, and cuckoo pint also occur, while the moist-loving broad-leaved garlic cannot be overlooked. Dog's mercury and the alternate-leaved and opposite-leaved saxifrages are also a pronounced feature of the flora. The dominant plants of the shade areas are undoubtedly the ferns, of the species *Athyrium Filix-fœmina*, *Lastrea Filix-mas*, *L. Oreopteris*, and *L. dilatata*. Wet zones were oftentimes entirely controlled by *Luzula maxima*, whose foliage had been badly damaged by frost and eaten by rabbits. Other prominent plants in the basal area are *Cardamines flexuosa*, *C. amara*, *Crepis paludosa*, Marsh violet, foxglove, herb robert, wood angelica, wood loosestrife, primrose, and marsh thistle. Verging the tree zone of the summit ridge to right, bilberry, *Deschampsia flexuosa*, *Agrostis vulgaris*, and *Blechnum boreale* dominated. A further conspicuous feature was the great quantity of seedling sycamore, indicative that here at any rate the fruitage yield of this tree in 1937 had been quite good. There were also a few ash seedlings, while trees upsprung in 1937 were also not uncommon. In fact, the flora as a whole is typical in all respects with that of the S.W. Yorkshire valleys opened out in the rocks of the Millstone Grit series.

Outside the ghyll to right is an area of rough pasture, part of which has been brought under cultivation for the purposes of a small nursery of trees consisting of Scot's pine, larch, mountain ash, birch, and spruce. In the immediate vicinity of Wath, plants noted were *Veronica officinalis*, sweet cicely, wall lettuce, ivy-leaved toadflax, wild strawberry, ground ivy, and bird cherry. At How Stean *Scolopendrium vulgare* and *Cystopteris fragilis* are common ferns.

Bryology.—Mr. F. E. Milsom writes: Attention was chiefly directed to Dauber Ghyll, running up from Wath-in-Nidderdale in the Millstone Grit. Scenically, this was very attractive and was of the same type as Ravensgill, though on the whole not so rich in varieties of bryophytes. Among the mosses the most striking was *Hyocomium flagellare*, which was abundant everywhere in a very luxuriant form. Although careful search was made, however, no fruit was discovered. Other notable finds were *Dicranodontium longirostre*, *Webera albicans* in fruit, and *Plagiothecium elegans* var. *collinum*. Among the hepatics, the large-celled form of *Eucalyx hyalinus*, also found in Ravensgill, was prominent. No *Jubula Hutchinsiae* was seen.

In the afternoon How Stean gorge was visited. It was noticed here that *Amblystegium filicinum* was in unusually abundant fruit, and also that *Pedinophyllum interruptum* was in splendid condition.

The following are the chief species noted :—

MOSSES

<i>Tetraphis Browniana</i> Grev. c.fr.	<i>Hycomium flagellare</i> B. & S.
<i>Dichodontium pellucidum</i> Schp.	<i>Plagiothecium elegans</i> Sull. var.
<i>D. flavescens</i> Lindb.	<i>collinum</i> Wils.
<i>Dicranodontium longirostre</i> B. & S.	<i>Brachythecium rivulare</i> B. & S. c.fr.
<i>Webera albicans</i> Schp.	<i>Amblystegium filicinum</i> De Not. c.fr.

HEPATICES

<i>Eucalyx hyalinus</i> (Lyell) Breidl.	<i>Aneura pinguis</i> (L.) Dum. c.fr.
<i>Aplosia sphaerocarpa</i> (Hook.) Dum.	<i>Pedinophyllum interruptum</i> (Nees) Pears.

Your secretary visited Little Whernside on the following day in an unsuccessful search for *Arctostaphylos* and was rewarded by finding *Orthodontium gracile* var. *heterocarpha* Wats. and fruiting masses of *Tetraphis pellucida* Hedw. at an altitude of 1,900 ft.

Lichens.—Mr. W. E. L. Wattam writes : DAUBER GHYLL, WATH.—The welcome rainfall was of service in enabling the intermingled wealth of *Parmelia physodes* Ach., *Parmelia saxatilis* Ach., *Cetraria glauca* Ach. and *Evernia furfuracea* Fr., which covered the tops of the silicious stones of the walls to display their beauty in full perfection and also to make conspicuous the golden patches of *Candelariella vitellina* Müll-Arg. The ghyll has been carved out of the silicious rocks of the Millstone Grit series and in consequence the lichen flora is attuned to the dominant geological formation. Especially in the wide arena at the commencement of the ghyll the immense rocks and boulders are clothed with the species *Parmelia physodes* Ach., *P. saxatilis* Ach., *P. sulcata* Tayl., and *Cetraria glauca* Ach., occasional patches of *Pannaria rubiginosa* Del., *Evernia furfuracea* Fr., *Lecanora muralis* Schaer., *L. polytropa* Schaer., *Lecidia coarctata* Nyl., *L. contigua* Fr. and its variety *flavicunda* Nyl., and *L. confluens* Ach. Corticolous species were represented by *Evernia prunastri* Mann, *Lecanora conizæa* (spruce boles), *L. symmicta* Ach., *Pertusaria pertusa* D.T. & L. Moss covered stumps of trees yielded *Peltigera canina* Nyl., *Cladonia pyxidata* Hoffm., *C. fimbriata* Fr., *C. gracilis* Willd., and its variety *chordalis* Floerke, and *C. coccifera* Willd., and old palings, *Lecanora varia* Ach.

How STEAN.—The afternoon was spent in this wonderous limestone gorge and its immediate vicinity. The whole of the species previously mentioned were noted on the silicious stone walls or on trees, and in addition *Collema pulposum* Ach (among limestone debris), *Xanthoria parietina* Th. Fr. and its var. *virescens*, *Placodium citrinum* Hepp., *Physcia ciliaris* D.C. (boles of mountain elm), *Ph. hispida* Tuckerm (oak boles and silicious stones), *Lecanora parella* Ach., *L. atra* Ach., *Gyrophora polyphylla* Hook., *Verrucaria muralis* Ach. (on mortar), *V. nigrescens* Pers. Within the gorge the only species noted were *Lecanora varia* (old palings), *L. calcarea* Sommerf., *Lecidia contigua* Fr., *L. immersa* Ach., *Dermatocarpon miniatum* Th. Fr. and its variety *complicatum* Th. Fr., *Cladonia pyxidata* Hoffm., *C. fimbriata* Fr., and *Verrucaria viridula* Ach.

Fungi.—Mr. W. G. Bramley writes : As was to be expected, the larger fungi, except for tougher species, were absent. Although a certain amount of time was devoted to the uredines, the list is rather meagre. Along the edge of Gouthwaite Reservoir the nettle was badly attacked by æcidia of *Puccinia caricis* and several examples of the galling effect of this species were seen.

D=Dauber Ghyll, Wath. R=Ramsgill.

MYXOMYCETES

<i>Trichia contorta</i> Rost. D.	<i>Trichia botrytis</i> Pers. D.
----------------------------------	----------------------------------

PHYCOMYCETES

- Cystopus candidus* (Pers.) de Bary. R, on *Shepherds purse*.
Peronospora ficariæ Tal. R, on *Ranunculus repens*.
P. schleideni Unjer. D, on *Allium ursinum*.

ASCOMYCETES

- Lachnea scutellata* (Lin.) Gillet. D.
Bulgaria inquinans (Pers.) Fr. D.
Trichoscypha calycina (Schum.) Boud. D.
Mollisia atro-cinerea (Cke.) Phil. D.
Rhytisma acerinum (Pers.) Fr. D, (ascophores).
Nectria cinnabarina (Tode.) Fr. D, R.
Hypocrea pulvinata Fckl. D.
Melanomma pulvis-pyrius (Pers.) Fckl. D.
Leptosphaeria acuta (M. & N.) Karst. D, R.
Diatrype stigma (Hoffm.) de Not.
Diatrypella verruciformis (Ehr.) Nib. D, on birch.
Hypoxylon multiforme Fr. D, on *Prunus padus*.
Xylaria hypoxylon (Linn.) Fr. D, R.

UREDINALES

- Uromyces ficariæ* (Schum.) Lev. D, III on *R. ficaria*.
U. scillarum (Grév.) Wint. D, III on *Scilla*.
U. dactylidis Otth. R, O, I on *Ran. repens*, II and old III on *Dactylis*.
U. poæ Rab. D, O, I on *R. ficaria*.
Puccinia obtegens Tul. D, R, O, I on *Cirsium arvense*.
P. tumida Grév. III, R, on *Bunium flexuosum*.
P. oblongata Wint. D, II on *Luzula sylvatica*.
P. caricis (Schum.) Reb. R, O, I on *Urtica* old III on *Carex*.

AGARICALES

- Collybia velutipes* (Curt.) Fr. D.

APHYLLOPHORALES

- Polyporus betulinus* (Bull.) Fr. D.
Fomes annosus Fr. D.
Polystictus versicolor (Linn.) Fr. D.
Dædalea quercina (Linn.) Fr. D.
Stereum hirsutum (Willd.) Fr. D.
S. purpureum (Pers.) Fr. D.
Corticeum læve (Pers.) Quel. D.

TREMELLALES

- Exidia glandulosa* (Bull.) Fr. D. on *Prunus padus*.

CALOCERALES

- Dacryomyces deliquescens* (Bull.) Duby. D.

GASTEROMYCETALES

- Lycoperdon pyriforme* (Schæff.) Pers. D.
Bovista nigrescens Pers. R.

FUNGI IMPERFECTI

- Phoma herbarum* West. D, R.
P. samararum Desm. D.
Oidium monilioides Link. R.
Botrytis cinerea f. *sclerotioiphila* (Rab.) Sacc. R.
Tilachlidium tomentosum (Schrad.) Lind. D.
Tubercularia vulgaris Tode. D, R.

YORKSHIRE NATURALISTS AT PICKERING

THE Whitsuntide meeting is usually the most successful of our excursions, and the Pickering gathering upheld this tradition, although we left the western dales for the eastern vales of the Pickering area. We were very fortunate in having as guide Mr. E. G. Highfield, who had been of great assistance to our Divisional Secretary, Mr. G. B. Walsh, handicapped as he was by his unfortunate illness; together they produced a programme which proved most interesting. Mr. R. J. Flintoff took a share of the load; he met us at the Hole of Horcum and demonstrated his views on *Cornus Suecica* L., and also gave an interesting talk in the evening on the 'Fall of the Leaf from Beech and Oak in Autumn.' The visit to the carr land where the watercress beds are situated and to the Keld Head Fish Hatchery were much appreciated. Our President, Mr. H. Hamshaw Thomas, joined us for part of the time, coming along from the Centenary Meeting of the Yorkshire Geological Society at Ingleton.

Ornithology.—Mr. Ronald M. Garnett reports :—

SATURDAY, JUNE 4TH.—The outstanding item of interest was undoubtedly the finding by Miss Birch of the Twite at Blakey Topping. She heard the note, and was able to confirm the species, watching it at close quarters and comparing notes with Miss Daniel.

SUNDAY, JUNE 5TH.—After the capture, for ringing purposes, of a well-grown young Redshank among the cress beds, near Keld Head, some of the ornithologists went down the Costa Valley below the brick-fields to the nest of a Kestrel in an old nest of Magpie in a hedgerow tree. There were five young birds still in grey down, and these were ringed. The parents did not put in an appearance. A Grasshopper Warbler, which had been located near by a few days before could not be found, but a pair of Willow Tits were watched feeding fledged young. A brood of Mallard were seen in a ditch beside the river, the parent duck giving a display of injury feigning, flapping across the grass away from the water. A total of 42 species was counted.

MONDAY, JUNE 6TH.—Nests of only five species were found. A Great Tit was feeding young in a hole in a high sandbank, and a Tree Pipit obligingly remained brooding her five eggs while her identity was established by half a dozen people. The eggs were of the red type with definite lines and blotches. The number of species seen or heard totalled 26, but the greater part of the day was given up to learning something from the botanists and entomologists of the party.

Conchology.—Mrs. E. M. Morehouse writes :—Molluscs were not plentiful, and of the species found, there were only a few; exceptional areas were the watercress beds; they yielded a quantity of *L. pereger* Müller. Slugs were scarce. I noted only one *Arion ater* v. *castanea* Dum. and Mort.

In Kingthorpe Woods, a number of species seen on previous occasions were not observed.

HOLE OF HORCUM

Carychium minimum Müller. *Agriolemax agrestis* L.

WATERCRESS BEDS AND CARR

Helix nemoralis L. 1 2 3 4 5. *Limnaea pereger* Müller.
H. nemoralis v. *carnea*. 1 2 3 4 *Succinea putris* L.
5. *Paludetrina jenkinsi* Smith.
H. nemoralis v. *olivacea* Risso.
o o o o o.

1938 Aug. 1

KINGTHORPE WOODS

Clausilia bidentata Ström.
C. laminata Montagu.
Hygromia hispida L.
Vitrea cellaria Müller.
V. alliaris Müller.

Vitrea pura Alder.
Pyramidula rotundata Miller.
Euconulus fulvus Müller.
Agriolimax agrestis L.

NEWBRIDGE QUARRIES

Helicella caperata Montagu.
H. virgata da Costa.
H. itala L.
Helix hortensis Müller. 1 2 3 4
 5.

Helix nemoralis L. 1 2 3 4 5.
H. aspersa Müller.
Hygromia hispida L.

HAUGH RIGG WOODS, ETC.

Helix nemoralis L. 1 2 3 4 5.
H. nemoralis v. *curvieria* Moq.
 0 0 3 0 0.
H. nemoralis v. *carnea*. 1 2 3 4
 5.
H. nemoralis v. *quettardia* Moq.
 0 0 3 0 0.
Arianta arbustorum L.

Hygromia rufescens Pennant.
Helicella itala L.
H. caperata Montagu.
Clausilia bidentata Ström.
C. laminata Montagu.
Pyramidula rotundata Müller.
Agriolimax agrestis L.
Arion ater v. *castanea* Dum. &
 Mort.

Mr. E. Dearing adds :—The following were found at Haugh Rigg on June 6th, 1938—*Acanthinula aculeata* Müll. juvenile and adult, *Clausilia laminata* Mont., *C. bidentata* Ström. juvenile and adult, *Pupa cylindracea*, *Helix nemoralis*, *H. hortensis*, *H. itala*, a deformed specimen.

The following were present in a 'Dew Pond' at Haugh Rigg :—*Limnaea pereger* Müller, *L. truncatula* Müller.

Entomology.—LEPIDOPTERA.—Mr. G. B. Walsh writes :—On the Saturday, probably owing to the high wind and little sunshine, Lepidoptera were not common on the wing. The only butterflies seen were *Pieris napi* and a late *Callophrys rubi*. *Ematurga atomaria* was abundant, and specimens of *Gelechia ericetella* and *Adela viridella* were also seen.

The larvæ beaten were *Cheimatobia boreata*, *C. brumata*, *Oporabia autumnata*, *O. dilutata*, *Hybernia marginaria*, *Crocallis elingvaria*, and *Tortrix viridana*. A single larvæ of *Lasiocampa callunae* occurred on heather.

Miss Ivy P. Thomas :—The following butterflies were on the wing : *Pieris brassicae*, *P. rapae*, *P. napi*, *Euchloë cardamines*, *Aglais urticae*, *Brenthis euphrosyne*, *Callophrys rubi*, *Chrysophanus phloea*, *Nemeobius lucina* (plentiful), *Nisoniades tages*, *Augiades sylvanus*. The moths seen were *Parasemia plantaginis* and *Ino geryon*. The larvæ were *Himera pennaria* and *Zygaena filipendulae*.

COLEOPTERA.—Mr. G. B. Walsh writes :—Unfortunately, I was able to be present at only the Saturday meeting at the Hole of Horcum and Cross Cliff. Beetles were very scarce, and a rather strong wind made collecting difficult. The following species were identified in the field :

Cicindela campestris L. Common.

Carabus glabratus L. This northern beetle is very local and uncommon in Yorkshire. A specimen was taken by Mr. S. Rowntree at Cross

Cliff on the Saturday preceding the excursion, and is recorded here.

Nebria iberica Ol.
Pterostichus adstrictus Esch.
Philonthus aeneus Rossi.
Adalia bipunctata L.
Coccinella 10-punctata L.
Brachypterus urticae L.
Epuraca melina Sturm.
Meligethes aeneus F.

Byturus tomentosus F.
Aphodius rufipes L.
Geotrupes stercorarius L.
G. stercorosus Scriba.
Adrastus nitidulus Marsh.
Dolopius marginatus L.
Cantharis livida L.
C. pallida Goeze.

Rhagium bifasciatum F. ab. *bicolor* Ol. This would seem to be a very rare aberration in Yorkshire.

Anaspis frontalis L.
A. maculata Fourc.
Otiorrhynchus singularis L.
Strophosomus melanogrammus
 Fourc.

Phyllobius oblongus L.
P. pyri L.
P. argentatus L.
Coeliodes rubicundus Herbst.

COLEOPTERA taken at Pickering.—The country around Pickering is from the point of view of the entomologist ideal; for here in quite a small area are to be found moors, woods, meadows and low-lying swampy ground.

The weather during the period of the meeting was fine and warm but very windy, the latter having an adverse effect on sweeping operations.

The visit paid to the Hole of Horcum and the surrounding moors was not very fruitful, a specimen of *Carabus nitens* L. taken by Mr. C. A. Cheetham, being the only really interesting beetle, which came my way, though Mr. G. B. Walsh took some uncommon insects here.

On Sunday, at the Keld Head watercress beds, it was noticed that the cress was very severely infested with *Phaedon cochleariae* F. So numerous was the beetle, one sweep of the net captured between 50 and 60 specimens. Another interesting beetle which occurred sparingly on the watercress was *Poophagus sisymbrii* F.

Monday was the most profitable day, when Haugh Rigg and the surrounding valleys were visited. Here in the shelter of the hills and trees, insects were quite numerous. The most noteworthy species were *Orobatis cyaneus* L., *Rhynchites mannerheimi* Hu., and *Stenochorus meridianus* Pz.

LIST OF SPECIES

Cicindela campestris L.
Carabus violaceus L.
C. nitens.
Thanatophilus sinuatus F.
Oeceotoma thoracicum L.
Adalia 10-punctata L.
Byrrhus pilula L.
Athous vittatus F.
Dolopius marginatus L.
Corymbites cupreus F.
C. tessellatus F.
Cantharis pellucida F.
C. livida L.
Rhagonycha lignosa Ml.
R. testacea L.
Dasytes plumbeus Ml.
Clytus arietis L.
Rhagium bifasciatum F.

Stenochorus meridianus Pz.
Lema lichenis Vt.
Phaedon cochleariae F.
Prasocuris junci Bm.
Attelabus nitens Sp.
Rhynchites aeneovirens Mn.
R. mannerheimi Hu.
Apion flavipes Pk.
A. violaceum K.
Phyllobius argentatus L.
P. masculicornis Gm.
Orchestes rusci Hb.
Orobatis cyaneus L.
Coeliodes dryados Gl.
Poophagus sisymbrii F.
Balaninus villosus F.
Balanobius salicivorus Pk.
Hylesinus fraxini Pz.

Diptera.—Mr. Chris. A. Cheetham writes :—In the following list some thirty are additions to the Vice-County Records and ten are additional to the full Yorkshire List.

<i>Sciara trochanterata</i> Ztt.	<i>E. rufiventris</i> Mg.
<i>Mycetophila obscura</i> Dz.	<i>Hilara maura</i> F.
<i>Neuratelia nemoralis</i> Mg.	<i>H. curtisi</i> Coll.
<i>Boletina trivittata</i> Mg.	<i>H. intermedia</i> Fal. (Coll.) (<i>pubipes</i>).
<i>Monoclona rufilatera</i> Wlk.	<i>Hercostomus nigripennis</i> Flin.
<i>Rhymosia cristata</i> Stæg.	<i>Sympycnus annulipes</i> Mg.
<i>Macrocera stigma</i> Curt.	<i>Chalarus spurius</i> Flin.
<i>Boletophila cinerea</i> Mg.	<i>Pipunculus terminalis</i> Thoms.
<i>Simulium reptans</i> L.	<i>P. flavipes</i> Mg.
<i>Limnobia nubeculosa</i> Mg.	<i>Chilosia maculata</i> Flin.
<i>L. tripunctata</i> F.	<i>C. chrysocoma</i> Mg.
<i>L. flavipes</i> F.	<i>C. pulchripes</i> Lw.
<i>Empeda nubila</i> Schum.	<i>C. variabilis</i> Pz.
<i>Erioptera tæniionota</i> Mg.	<i>C. albitarsis</i> Mg.
<i>Lipsothrix remota</i> Wlk.	<i>Syrphus venustus</i> Mg.
<i>Epiphragma picta</i> F.	<i>Xanthogramma citrofasciata</i> Deg.
<i>Limnophila ochracea</i> Mg.	<i>Sphagina clunipes</i> Flin.
<i>Cylindrotoma distinctissima</i> Mg.	<i>Cynomyia mortuorum</i> L.
<i>Tricyphona immaculata</i> Mg.	<i>Lasiops (Hyetodesia) semicinereus</i>
<i>Pachyrrhina maculata</i> Mg.	Wd.
<i>Tipula varicornis</i> Schum.	<i>Phaonia (Hyetodesia) scutellaris</i>
<i>T. hortulana</i> Mg.	Flin.
<i>T. varipennis</i> Mg.	<i>Cænobia humilis</i> Mg.
<i>T. scripta</i> Mg.	<i>Helomyza pallida</i> Flin.
<i>T. luna</i> West.	<i>Blepharoptera biseta</i> Lw. (<i>Chætomus</i>
<i>T. lateralis</i> Mg.	<i>flavotestaceus</i> Ztt.).
<i>T. vernalis</i> Mg.	<i>Ditænia (Sciomyza) cinerella</i> Flin.
<i>T. oleracea</i> L.	<i>Sciomyia dubia</i> Flin.
<i>Ctenophora pectinicornis</i> L.	<i>Phæomyza fuscipennis</i> Mg.
<i>Beis vallata</i> Forst.	<i>Tetanocera elata</i> F.
<i>Leptis scolopacea</i> L.	<i>Trypetoptera (Tetanocera) punctu-</i>
<i>Rhamphomyia sulcata</i> Flin.	<i>lata</i> Scop.
<i>R. flava</i> Flin.	<i>Psila fimetaria</i> L.
<i>Empis tessellata</i> F.	<i>Chyliza annulipes</i> Mcq.
<i>E. trigramma</i> Mg.	<i>Seoptera vibrans</i> L.
<i>E. stercorea</i> L.	<i>Palloptera arcuata</i> Flin.
<i>E. vernalis</i> Mg.	

Flowering Plants.—Miss C. M. Robb writes :—Saturday morning was spent in the Hole of Horcum, where the *Cornus Suecica* was in splendid condition. Other plants of 'The Hole' were *Listera cordata*, *Carex dioica*, *Trientalis europæa*, *Botrychium Lunaria*, *Ophioglossum vulgatum*, *Drosera rotundifolia*, *Anagallis tenella*, and *Oxyccoccus quadripetala*. In the afternoon Crosscliffe and Blakey Topping were visited, where *Trientalis* was again seen, also *Vaccinium Vitis-Idæa*.

On Sunday the finding of a large quantity of *Catabrosa aquatica* in the watercress beds at Keld Head was an outstanding feature of the day. Other plants of the Costa Beck area included *Potamogeton densus*, *Hippuris vulgaris*, *Potentilla palustris*, *Onicus pratensis*, *Veronica Anagallis-aquatica*, *Ranunculus hederaceus*, and *Omphalodes verna*.

On Monday the Quarries and Woodlands of Haugh Rigg were visited, and great quantities of the butterfly orchis, *Platanthera chlorantha*, seen; other orchids seen were the frog, *Habenaria viridis*, the fly, *Ophrys muscifera*, *Orchis mascula*, and *Neottia Nidus-avis*, the latter very sparingly. There were several fair-sized patches of *Convallaria majalis*, but very little in flower. Other plants noted were *Paris quadrifolia*,

Rosa spinosissima, *Aquilegia vulgaris*, *Rubus saxatilis*, *Euonymus europaeus*, *Melica nutans*, and *Mentha rotundifolia*.

Lichens.—W. E. L. Wattam writes :—PICKERING.—The investigation of further suitable areas within the Township of Pickering enabled me to make the following additions to the list published by me in *The Naturalist*, September, 1929, pp. 314-315, viz. :

- Peltigera canina* Willd. Humus of woodland floor, Haugh Rigg.
P. rufescens Hobbm. and its variety *prætextata* Nyl. Amongst mosses in old quarry.
Lecanora galactina subsp. *dissipata* Nyl. On calcareous stones, old quarry.
L. campestris B. de L. On siliceous boulders, Haugh Rigg.
Acarospora fuscata Th. Fr. On calcareous stones, old quarry.
Cladonia pyxidata f. *myriocarpa* Cromb. On the ground, old quarry.
Biatorella pruinosa Mudd. On calcareous stones, old quarry.

Mr. Shaw collected *Usnea florida* Web. and *Peltigera canina* Willd., in the vicinity of Cross Cliff, both of which are additional records for that locality.

HOLE OF HORCUM, SALTERSGATE.—Considerable time was spent within this natural basin-shaped hollow, from its curved summit rim downwards to the narrowing southern end, linking up with my investigations as far as Chilton's Folly, included in my report previously mentioned. Habitats for corticolous species are practically limited to the north and east of the Hole. The Oak is the dominant tree, the remaining trees being Sycamore, Ash, Mountain Ash, Wych Elm, Hawthorn, Hazel, Spruce, and Scot's Pine. Fruticulose species are, with the exception of a stunted form of *Evernia furfuracea* Mann. absent, whilst the foliose species are not superabundant. North-eastward and east to the verge of the cultivated zone ercetal plants dominate, Ling and Bilberry being the chief, whilst within this area, especially on the moorland summit ridge, stones and boulders of the lower calcareous grit are quite prominent. Old and new fencing form an additional habitat. The species noted within this area (omitting the two farmhouses) are as follows :

- | | |
|---|---|
| <i>Evernia furfuracea</i> Mann. | <i>Cladonia gracilis</i> Willd. and its form <i>chordalis</i> . |
| <i>Cetraria glauca</i> Ach. | <i>Cl. pyxidata</i> Hoffm. and var. <i>chlorophæa</i> Floerk. |
| <i>Parmelia physodes</i> Ach. and its var. <i>labrosa</i> . | <i>Cl. fimbriata</i> Fr. |
| <i>P. saxatilis</i> Ach. and its f. <i>furfuracea</i> Schaer. | <i>Cl. macilenta</i> Hoffm. |
| <i>P. fuliginosa</i> var. <i>lætevirens</i> Nyl. | <i>Cl. cervicornis</i> Schaer. |
| <i>P. sulcata</i> Tayl. | <i>Cl. digitata</i> Hoffm. |
| <i>Candelariella vitellina</i> Müll.-Arg. | <i>Cl. coccifera</i> Willd. |
| <i>Physcia hispida</i> Tucterm. | <i>Cl. squamosa</i> Hoffm. |
| <i>Lecanora muralis</i> Schaer. | <i>Lecidia confluens</i> Ach. |
| <i>L. varia</i> Ach. | <i>L. contigua</i> Fr. |
| <i>L. conizæa</i> Nyl. | <i>L. sanguinaria</i> Ach. |
| <i>L. symmictera</i> Nyl. | <i>L. rivulosa</i> Ach. |
| <i>L. galactina</i> subsp. <i>dissipata</i> Nyl. | <i>L. granulosa</i> Schaer. and its var. <i>escharoides</i> Schaer. |
| <i>L. polytropa</i> Schaer. | <i>L. flexuosa</i> Nyl. |
| <i>L. atra</i> Ach. | <i>L. uliginosa</i> Ach. |
| <i>L. campestris</i> B. de L. | <i>Rhizocarpon confervoides</i> DC. |
| <i>L. sulphurea</i> Ach. | <i>Rh. alboatrum</i> Th. Fr. |
| <i>Pertusaria faginea</i> Leight. | <i>Rh. obscuratum</i> Massal. |
| <i>P. pertusa</i> D.T. & S. | <i>Verrucaria migrescens</i> Pers. |
| * <i>Parmelia physodes</i> Ach. | <i>V. muralis</i> Ach. |
| * <i>P. saxatilis</i> Ach. | |
| <i>P. wulfenii</i> DC. | |

On the west side of the Hole the Lichen flora is meagre. This is due in a marked degree to the fact that immense areas have been burnt and subsequently pared of the surface peaty turf. As a consequence Bracken has become the dominant plant. There are a few areas where Ling and dry Loving grasses predominate. The constant burning prevents the luxuriant growth of *Cladonia sylvatica* Hoffm. and *Cetraria aculeata* Fr. which here occur in but slight tufts. *Lecidia granulosa* Schaer. and its form *escharoides* Schaer. and *L. uliginosa* Ach. are the most abundant species. There are but few saxicolous species, only *Lecanora muralis* Schaer., *Lecidia contigua* Fr. and *L. sanguinaria* Ach. being listed.

The dwelling-houses and farm buildings known as High Horcum Farm and Low Horcum Farm give the best results, especially the parts of these buildings which face north and east. At High Horcum Farm the buildings contain a much greater amount of calcareous stone-work than is the case at Low Horcum Farm, where the stone-work is mostly of a silicious nature. Also included are the fences and trees surrounding the farms. The listed species are as follows :

- | | |
|---|--|
| * <i>P. sulcata</i> Tayl. | * <i>L. galactina</i> Ach. and its f. |
| † <i>Evernia prunastri</i> Ach. | <i>dispersa</i> Nyl. |
| * <i>Ev. furfuracea</i> Mann. | † <i>L. calcarea</i> Sommerf. |
| * <i>Xanthoria parietina</i> de Not. | † <i>L. campestris</i> B. de L. |
| * <i>Placodium citrinum</i> Hepp. | † <i>L. parella</i> Ach. |
| * <i>Candelariella vitellina</i> Müll.-Arg. | * <i>L. polutropa</i> Schaer. |
| * <i>Lecanora muralis</i> Schaer. | * <i>L. atra</i> Ach. |
| * <i>L. varia</i> Ach. | * <i>Acarospora fuscata</i> Th. Fr. |
| * <i>L. conizæa</i> Nyl. | † <i>Lecidia coarctata</i> Nyl. |
| † <i>L. symmictera</i> Nyl. | * <i>L. sanguinaria</i> Ach. |
| † <i>L. cinera</i> Sommerf. | * <i>Rhizocarpon confervoides</i> DC. |
| | * <i>Verrucaria muralis</i> Ach. (Mortar). |

An asterisk denotes that the species was noted at both farms ; a dagger at High Horcum Farm only ; a double dagger at Low Horcum Farm only.

MULLION (MALLYAN) SPOUT.—The brief walk from the Goathland approach to the Fall has an interesting Lichen flora. The rocks are all silicious, and a prominent species thereon in excellent fruit was *Bæomyces rufus* DC. and its var. *subsquamulosus* Nyl. Here occur

- | | |
|--|-------------------------------------|
| <i>Peltigera canina</i> Willd. | <i>L. cinera</i> Sommerf. |
| <i>P. rufescens</i> Hoffm. and its var. | <i>Hæmatomma ventosum</i> Massal. |
| <i>prætextata</i> Nyl. | <i>Pertusaria pertusa</i> D.T. & S. |
| <i>Evernia furfuracea</i> Mann. | <i>Bæomyces rufus</i> DC. and var. |
| <i>Cetraria glauca</i> Ach. | <i>subsquamulosus</i> Nyl. |
| <i>Parmelia physodes</i> Ach. | <i>Cladonia pyxidata</i> Hoffm. |
| <i>P. saxatilis</i> Ach. and its f. | <i>Cl. fimbriata</i> Fr. |
| <i>furfuracea</i> . | <i>Cl. gracilis</i> Willd. |
| <i>P. sulcata</i> Tayl. | <i>Cæogonium ebeneum</i> A. L. Sm. |
| <i>P. fuliginosa</i> var. <i>lætevirens</i> Nyl. | <i>Lecidia contigua</i> Fr. |
| <i>Lecanora subfusca</i> var. <i>chlarona</i> | <i>L. rivulosa</i> Ach. |
| Ach. | <i>L. confluens</i> Ach. |
| <i>L. muralis</i> Schaer. | <i>L. coarctata</i> Nyl. |
| <i>L. varia</i> Ach. | <i>Rhizocarpon confervoides</i> DC. |
| <i>L. conizæa</i> Nyl. | <i>Verrucaria muralis</i> Ach. |
| <i>L. polytropa</i> Schaer. | |

Fungi.—Mr. W. G. Bramley writes :—

- | | |
|--------------------|---------------------|
| H=Hole of Horcum. | K=Kingthorpe Woods. |
| C=Crosscliffe. | R=Haugh Rigg. |
| W=Watercress Beds. | *=New to Yorkshire. |
| †=New to V.C. 62. | |

MYXOMYCETES

- Ceratiomyxa fruticulosa* Macbr. C.
Fuligo septica Gm. R.
Reticularia lycoperdon Bull. R.
Lycogola epidendrum Fr. C, R, K.
Trichia contorta Rost. K.
† *T. lutescens* Lister. K.
Arcyria incarnata Pers. K.
Plasmodiophora brassicæ Woron. H, on Charlock.

PHYCOMYCETES

- Peronospora ficariæ* Tul. W, on Ran. repens.
P. schleideni Unger. K, R, on Allium.
† *Entomophthora coleopterorum*. R, on beetle. Not in *Catalogue of Yorkshire Fungi*, but recorded from Hawes, V.C. 65, *Nat.*, 1936, p. 188.

ASCOMYCETES

- Onygena equina* Willd. C.
Erysiphe graminis DC. Common on grasses in Oidium stage.
Rhytisma acerinum (Pers.) Fr. K, R, C, ascophores.
Nectria cinnabarrina (Tode.) Fr.
N. sinopica Fr. K.
N. aquifolii (Fr.) Berk. H.
Endothella junci (Fr.) T. and Syd. C.
Leptospora ovina (Pers.) Fckl. C.
L. spermoides (Hoffm.) Fckl. A, C.
Bertia moriformis (Tode.) de Not. A.
* *Leptosphaeria derasa* (B. & Br.) Auersw. K, on Ragwort stems.
* *L. libandtis* (Fckl.) Niess. W, on Angelica stems.
L. acuta (Mong.) Karst. W.
Valsa ambiens (Pers.) Fr. H.
Diaporthe leiphæmia (Fr.) Sacc. H, R.
* *Eutype flavo-virens* (Fr.) Tul. R.
Pseudovalsa lanciformis (Fr.) Ces & de Not. W, on Betula.
Diatrype stigma (Hoffm.) Fr. H, R, K.
Diatrypella favacea (Fr.) Ces. & de Not. R, on Betula.
D. verruciformis (Ehrh.) Nits. R, K, on hazel.
Sillia ferruginea (Pers.) Karst. K.
Hypoxylon fuscum (Pers.) Fr. K, R.
Xylaria hypoxylon (Linn.) Grév. C.
Cryptodiaporthe salicina (Curr.) Wehm. W. = *Cryptosporella populina* (Fckl.) Sacc.
* *Thridaria rubronotata* (B. & Br.) Sacc.. C.
Eutypella prunastri (Pers.) Sacc. R. = *Valsa*.
* *E. sorbi* (Schum.) Sacc. K. Not in *Catalogue of Yorkshire Fungi*, but recorded in *Trans. Brit. Mycol. Soc.* XVI, p. 9, from same locality.

BASIDIOMYCETES

- Ustilago longissima* (Sow.) Tul. W, on *Glyceria aquatica*.
Urocystis violæ (Sow.) Fisch. v. Wald. on *V. riviniana*. K.
Phragmidium sanguisorbæ Schroet. A.O.I.
P. disciflorum James on *R. spinosusima*. A.O.I.
Triphragmium ulmaricæ West. K, W, on *Spirea*, O.I.
Uromyces valeriana (Schum.) Fckl. W, on *V. dioica*, O.I.
U. alchemillæ Lév. R, II.
U. ficariæ (Schum.) Lév. R, K.
U. poæ Raben. K, on *Ran. ficaria*, O.I.

Puccinia obtogens Tul. W.

P. hieracii Mart. R, on *H. pilosella*, II.

P. betonicæ DC. K, R.

P. primulæ (DC) Duby. R, on *Primula*, O.I.

P. heraclei Grév. R, on *Heracleum*, O.I.

P. pulverulenta Grév. W, on *Epilobium hirsutum*, O.I.

P. epilobii DC. H, on *E. palustre*.

P. violæ (Schum.) DC. R, on *V. riviniana*, O.I.

P. fusca Wint. K, R.

P. chondrillæ Corda. R, on *Lactuca muralis*, I.

P. sessilis Schneid. W, on *Phalaris* old III. Possibly the biologic species *P. orchidearum-phalaridis* Kbeb., but no aecidia could be found.

P. poarum Niels. R, on *Tussilago*, O.I.

**Collybia atrata* Fr. H.

Marasmius oreades (Bolt.) Fr. R.

M. dryophilus (Bull.) Karst. R.

Pholiota præcox (Pers.) Fr. C, R.

Bolbitius fragilis (Linn) Fr. R.

Galera hypnorum var. *sphagnorum* (Pers.) Fr. C.

Hypholoma velutinum (Pers.) Fr. R.

Panæolus campanulatus (Linn.) Fr. W.

Coprinus plicatilis (Curt.) Fr. R.

Boletus elegans (Schum.) Fr. R.

Polyporus squamosus (Huds.) Fr. R.

P. sulphureus (Bull.) Fr. K.

Polystictus versicolor (Linn.) Fr. H, K, R.

Trametes mollis (Somm.) Fr. R.

Dædalea quercina (Linn.) Fr. K.

Acia uda (Fr.) B. & G. K.

Stereum hirsutum (Willd.) Fr. K, R, H.

Hymenochæte rubiginosa (Dicks.) Lév. R.

Corticeum læve (Pers.) Quel. C.

Exidia glandulosa (Bull.) Fr. K.

Dacryomyces deliquescent (Bull.) Dubj. C, H, R, K.

Calocera cornea (Batsch.) Fr. K.

Phallus impudicus (Linn.) Pers. R.

FUNGI IMPERFECTI

Phoma herbarum West. K, W.

Oidium farinosum Cke. on hawthorn. R.

Botrytis cinerea Pers. C, R.

Tilachlidium tomentosum (Schrad.) Lind. K.

Tubercularia vulgaris Tode. R.

Cephalosporium acremonium Corda. R.

I am indebted to Messrs. E. W. Mason and T. Petch, and to the Keeper of Botany (British Museum) for help in determinations.

Algae.—Dr. Edna M. Lind writes :—The two algæ we found in the stream at the watercress beds were *Batrachospermum moniliforme* and *B. vagum*.

At the evening meeting on Monday, Mr. E. R. Cross, of Scarborough, took the Chair, and various reports on the work done were presented, and a very cordial vote of thanks to the Divisional Secretary, Mr. G. B. Walsh, and to the leader, Mr. E. G. Highfield, was carried on the motion of our Treasurer, Mr. S. D. Persy Fisher, and another was moved by Mr. A. E. Peck for the services rendered by Mr. R. J. Flintoff; this also was unanimously carried.

COLLECTING APPARATUS.

Nets	Vascula	Aquaria
Entomological Apparatus	Plant-Presses, etc.	Geologist's Apparatus
Larva-Cages	Pond-Nets	Dissecting Instruments
Vivaria	Collecting Tubes	Microscopes, etc.

All requisities for indoor or outdoor work in every branch of Natural History.

FLATTERS & GARNETT, LTD.,

309 OXFORD ROAD, MANCHESTER.

Issued bi-monthly, Illustrated with Plates and Text Figures.
To Subscribers, 12s. 6d. post free.

The Scottish Naturalist

With which is incorporated 'THE ANNALS OF SCOTTISH NATURAL HISTORY'

EDITED BY
A. C. STEPHEN, D.Sc., F.R.S.E.

Keeper, Natural History Department, Royal Scottish Museum.

AND
PERCY H. GRIMSHAW, I.S.O., F.R.S.E., F.R.E.S.
Formerly Keeper, Natural History Department, Royal Scottish Museum.

Assisted by:—Professor JAMES RITCHIE, M.A., D.Sc., F.R.S.E.; EVELYN V. BAXTER, F.Z.S., H.M.B.O.U.; LEONORA J. RINTOUL, F.Z.S., H.M.B.O.U.; H. S. GLADSTONE, M.A., F.R.S.E., F.Z.S.; C. H. O'DONOGHUE, D.Sc., F.R.S.E.; ANDERSON FERGUSON, F.R.E.S.; A. R. WATERSTON, B.Sc.

Subscriptions should be addressed to the Publishers,
Messrs. OLIVER & BOYD, LTD., Tweeddale Court, Edinburgh.

WATKINS & DONCASTER

NATURALISTS,

36, STRAND, LONDON, W.C.2

(Five doors from Charing Cross),

P.O. Box 126.

Telephone: Temple Bar 9451.

Keep in stock every description of

APPARATUS, CABINETS, BOOKS & SPECIMENS

for Collectors of

BIRDS' EGGS, BUTTERFLIES, MOTHS, Etc.

Catalogue (96 pages) sent post free on application.

NORTH WESTERN NATURALIST

A SCIENTIFIC AND EDUCATIONAL JOURNAL (Published Quarterly),
especially for Cheshire, Cumberland, Derbyshire, Isle of Man,
Lancashire, North Wales, Shropshire, Staffordshire and Westmorland.

EDITED BY A. A. DALLMAN, A.L.S., F.C.S., in collaboration with

H. BRITTEN, F.R.E.S.

F. J. BROWN, M.Sc.

Rev. G. H. CARPENTER, D.Sc.

W. E. COLLINGE, D.Sc., F.S.A.

R. H. CORSTORPHINE, B.Sc., F.L.S.

R. J. FLINTOFF, F.L.S., F.Z.S., F.C.S.

H. E. FORREST, F.L.S.

J. W. JACKSON, D.Sc., F.G.S.

T. A. JONES.

H. W. MILES, M.Sc., Ph.D.

C. L. WALTON, M.Sc., Ph.D.

F. E. WEISS, D.Sc., F.R.S., LL.D.

A. WILSON, F.L.S., F.R.MET.S.

Communications to:—

Editorial—A. A. Dallman, A.L.S., F.C.S., 12 Tickhill Road, Doncaster.

Business—T. Buncle & Co., Ltd., Market Place, Arbroath.

Annual Subscription, 7/6. Single copies, 2/- net.



Reduced Reproduction of Plate IX.

AN
ENTIRELY
NEW
PUBLICATION

BY

H. A. LEAR

National Association of Swimming
Instructors.

WITH FOREWORD BY

FRED G. MILTO

Five Times English Champion.

Crown 8vo,
120 pages, with 90 diagrams
plus 20 full-page plates,
cloth boards

3/6 NET.

SWIM LIKE A FISH

HOW TO BECOME AN ALL-ROUND SWIMMER

This book will prove a real boon to those countless thousands of people who are possessed of that inherent desire to "swim like a fish." Every branch of the great pastime, including the art of diving, is most carefully explained, step by step. The many explanatory diagrams, and the full-page photographic plates show what to do, and, in certain instances, what not to do. All who are prepared to put into practice the teachings contained in this book will achieve their ambition of becoming expert swimmers.

Obtainable through all Booksellers.



DIAGRAM 90—Tandem Back Crawl.

LONDON: A. BROWN & SONS, LTD., 5 Farringdon Avenue, E.C.4.

Printed by A. BROWN & SONS, LTD., Perth Street West, Hull, and published by A. BROWN & SONS, LTD., at 5 Farringdon Avenue, in the City of London.

the NATURALIST

A MONTHLY
ILLUSTRATED JOURNAL SEP 12 1938
PRINCIPALLY FOR THE NORTH OF ENGLAND



Edited by

H. PEARSALL, D.Sc., F.L.S., and W. R. GRIST, B.Sc.,
The University, Leeds.

with the assistance as referees in special departments of

H. B. Booth, F.Z.S., M.B.O.U.

J. M. Brown, B.Sc., F.R.E.S.

W. H. Burrell, F.L.S.

Chris. A. Cheetham, F.R.E.S.

W. J. Fordham, M.R.C.S., L.R.C.P.,
D.P.H.

Riley Fortune, F.Z.S., F.R.P.S.

Professor A. Gilligan, D.Sc., F.G.S., M.I.M.E.

Mrs. Elsie M. Morehouse.

Thos. Sheppard, M.Sc., F.G.S., F.Z.S.

T. W. Woodhead, Ph.D., M.Sc., F.L.S.

Contents

PAGE

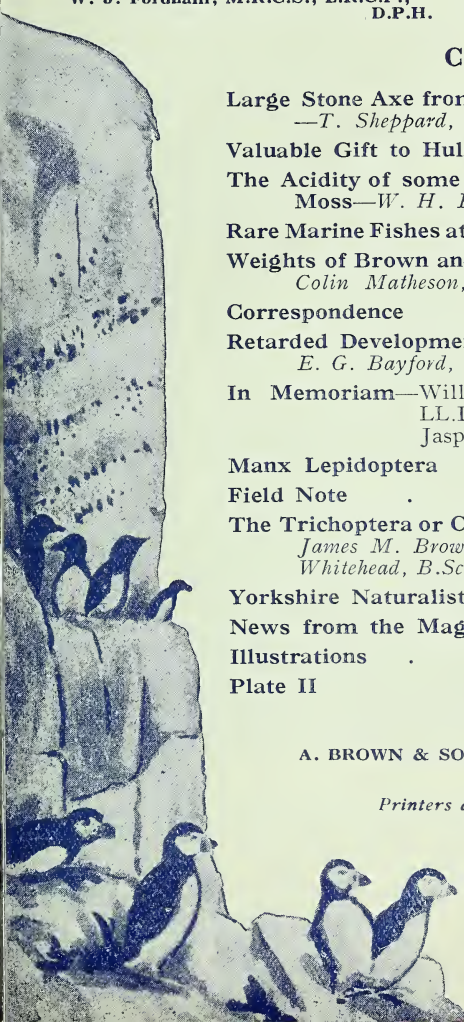
Large Stone Axe from Scarborough (<i>illustrated</i>) —T. Sheppard, M.Sc.	245-246
Valuable Gift to Hull Museum	246
The Acidity of some Peaty Pools on Austwick Moss—W. H. Pearsall	247-249
Rare Marine Fishes at Scarborough—W. J. Clarke	250
Weights of Brown and Black Rats (<i>illustrated</i>)— Colin Matheson, M.A., B.Sc.	251-253
Correspondence	253
Retarded Development: <i>Hylotrupes bajulus</i> , L.— E. G. Bayford, F.R.E.S.	254-256
In Memoriam—William Eagle Clarke, I.S.O., LL.D., F.R.S.E. (portrait)—T.S. Jasper Atkinson—R.C.	256-257 258-259
Manx Lepidoptera	259
Field Note	259
The Trichoptera or Caddis-Flies of Yorkshire— James M. Brown, B.Sc., F.R.E.S., and H. Whitehead, B.Sc.	260-265
Yorkshire Naturalists at Askern	266-268
News from the Magazines	253, 268
Illustrations	245, 251
Plate II	

LONDON:
A. BROWN & SONS, Ltd., 5 Farringdon Avenue, E.C.4,
And at Hull.

Printers and Publishers to the Y.N.U.

PRICE 1/6 net.

Prepaid Subscription
15/- per annum.



A book that will be appreciated by Yachtsmen and by all who love the sea.

SPARE TIME SAILING

Being a record of forty years' Sailing and Cruising experiences off the North-East Coast and on the Humber Estuary and North Sea.

BY
HERBERT WOOD



LINNET

75 pages + x, 7½" × 5", with 10 full page Sketches and Maps, and 9 full page Plates, bound in Vellum Cloth Boards. Price 3/9 net. Post free 4/3 net.

Obtainable through all Booksellers.

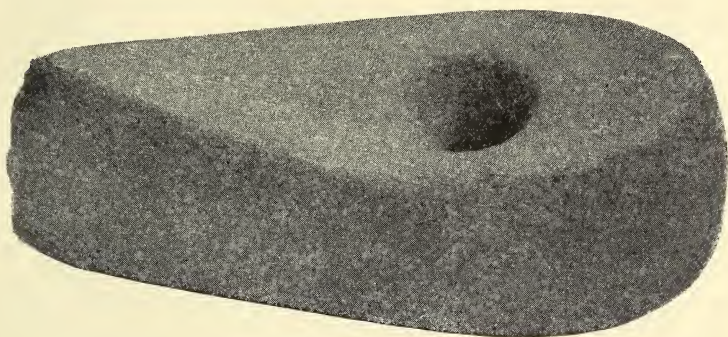
LONDON : A. BROWN & SONS, LTD., 5 Farringdon Avenue, E.C.4.

LARGE STONE AXE FROM SCARBOROUGH

T. SHEPPARD, M.Sc.

WHEN visiting a private collection in Scarborough recently, I saw a large stone axe, more massive than any in the Mortimer Collection, at Hull, which is saying much. By means of an exchange we obtained the axe for the Mortimer Collection and have sent a coloured facsimile to the owner of the original, and also a copy to the Scarborough Museum, where, perhaps strictly speaking, the original ought to be if it were not such an outstanding example.

The axe was formerly in the Bean Collection and was purchased at the sale of the Bean effects. It is of Eastern



Scottish Quartz Dolerite, and I would imagine has been made from a glacially transported boulder. Large quantities of these rocks occur in the Scarborough district, several hundreds over a foot in diameter having been classified by the Yorkshire Erratic Blocks Committee, of which details were published in *The Naturalist*.

The specimen weighs $8\frac{1}{2}$ lbs. and is 10 in. in length, $4\frac{1}{2}$ in. in width at the centre, and is roughly boat-shaped. The cutting edge is $3\frac{3}{4}$ in. in length, and the opposite end is practically oblong, measuring $3\frac{1}{2}$ in. by $2\frac{3}{4}$ in., and has evidently been used as an hammer.

Towards the thick end there is a large hole for the shaft, which has been bored alternately at each side until the middle was reached, thus leaving a distinct 'hour-glass' section, which for an implement of this size must have been very difficult to secure to a shaft; possibly this was done by the aid of thongs. This hole measures 2 in. in width at the outside, while in the centre it is very slightly over 1 in. Both the top and bottom of the axe have been slightly hollowed after the fashion of the Danish perforated axe, and after the type of the

similar axe found in the Bronze Age barrows. The depression is over a $\frac{1}{4}$ in. deep in the centre. At some period, probably in comparatively modern times, the cutting edge has been used on some hard substance, and the hammer has been chipped but not to a serious extent. In this, it resembles a similar axe, not quite so large, in the Mortimer Collection. This example was actually seen in use by the late J. R. Mortimer about fifty years ago.

Road breakers were frequently seen on various parts of the Yorkshire Wolds, where they broke a heap of large boulders for road repairs. In this particular instance, a man was using a fine stone-axe head, in the hole of which he had inserted a wooden shaft, and was breaking the stones with it. He told Mr. Mortimer he had picked it up on the adjacent field, and he found it more effective than the little iron hammer which was supplied to him. Of course, Mr. Mortimer immediately rescued it.

VALUABLE GIFT TO HULL MUSEUM.

THE valuable collection of geological specimens and the geological library formed by the late J. W. Stather, F.G.S., has been presented to the Museum at Hull by his widow.

Mr. Stather was fortunate in being able to collect many of his beautiful specimens from the Speeton Clays, near Flamborough, where many years ago they were exposed but have since been covered and are inaccessible; many of the specimens are from the shell beds once exposed at Bridlington, and from the chalk, oolites and lias. For many years his collection has been at the service of the Geological Survey and various specialists, while some of the specimens he found which were new to science were named after him.

The collection is contained in a series of well-made mahogany cabinets and is indexed and catalogued. The geological literature which will be placed with the specimens is specially valuable, as it contains several hundred privately printed pamphlets bearing on the geology of Yorkshire, as well as sets of geological and natural history publications bearing upon the district. This library is also card-catalogued which makes it readily available to anyone interested.

The collection is being placed in the room at the Subscription Library which has been taken over by the Museums Committee, and will eventually contain many collections which have previously been in store, namely: the geological specimens from the Mortimer Collection, collections from the museums at Malton and Whitby, and collections formed by the late Dr. F. F. Walton, H. C. Drake, C. Fox-Strangways, C. Leader, and others.

THE ACIDITY OF SOME PEATY POOLS ON AUSTWICK MOSS

W. H. PEARSALL

Most areas of lowland peat to-day possess an irregular surface owing to peat cutting. In the deeper depressions so caused, water accumulates and gradually a very characteristic (if limited) flora and fauna may develop. Austwick Moss in particular has a large number of peaty pools formed in this way among the old peat cuttings. These show a certain variety in their biological features which is of considerable interest. Moreover, many of these pools have been under continuous observation since 1916 by Messrs. W. H. Burrell and C. A. Cheetham. Their report is to appear later, and the present description of the main biological features is based upon their observations.

The two most common and distinct types of pool are characterised respectively by *Sphagnum cuspidatum* and *Hypnum fluitans*. Both are suspended in comparatively clear and deep water at least one foot in depth. (The water is, of course, tinged yellow with peaty matter.) We may distinguish these as *Sphagnum* and *Hypnum* pools.

But there is, in addition, one pool, situated near a group of *Hypnum* pools which is quite different from any other on the Moss. This, in addition to containing tadpoles and a considerable population of *Corethra* larvæ, is also different from its neighbours in the presence of *Potamogeton polygonifolius*, *Sparganium minimum* and *Carex Goodenowii*. It is distinguished as the tadpole pool.

There are, of course, also some *Sphagnum* pools which are partly filled up, and of these there may be two types. Two were observed nearly obliterated, which were originally shallow and small and which now contained much *Oxycoccus quadripetala* with *Eriophorum angustifolium* among dense *Sphagnum*. These shallow 'Oxycoccus pools,' among *Eriophorum vaginatum*, are certainly dry at times.

Some of the larger pools are being actively filled up by a mixture of *Eriophorum angustifolium* and *Comarum palustre* with much *Sphagnum*. These certainly always contain standing water, and are the seat of active sub-aqueous peat formation.

Finally, on the north-west side of the Moss there are a few depressions which generally contain water and which are surrounded by *Phragmites* and *Myrica Gale*. Here also *Sphagnum* is usually present on the pool edge, though apparently not generally submerged. This area possibly represents a vegetation transitional between that of the original lake and the present Moss.

At the end of June, 1938, observations were taken of the pH value of the waters in these bog pools. These observations

were primarily concerned with deciding whether there was any difference in the acidity or pH value between the *Sphagnum* and *Hypnum* pools, but the opportunity was taken to examine other pools as well. The determinations were done colorimetrically in the field, using as indicators brom phenol blue, brom cresol green, brom cresol purple and brom thymol blue. Two drops of indicator were added to about 10 cc. of water. Three buffer solutions, at pH 3.5 (brom phenol blue), 4.5 (brom cresol green), and 5.5 (brom cresol purple) were used to check intermediate colours in the ranges, and at least two indicators were employed in each determination. The pH values are probably accurate to within 0.1. Each pool was tested at two places at least, more if it was large. Only in the partly-filled up pools was any difference in pH observed between places in the same pool. In the following summary, such results are shown as a range, e.g. pH 4.5—4.6, otherwise each figure given represents a different pool.

<i>Pool type.</i>			<i>pH values.</i>
1. <i>Sphagnum</i>	...	...	3.6, 3.8, 3.4, 3.6, 3.4
2. <i>Hypnum</i>	...	...	4.5, 4.6, 4.4, 4.6
3. <i>Tadpole</i>	...	...	6.6-6.8
4. <i>Comarum</i>	...	...	4.6-4.8, 4.8-5.0
5. <i>Oxycoccus</i>	...	...	3.4, 3.4
6. <i>Phragmites-Myrica</i>	...	...	5.2, 5.4
7. North-west Drain	...	...	7.0-7.2

These figures show that there appears to be a consistent difference between the *Sphagnum* pools and the *Hypnum* pools, the former being very much *more* acid. The tadpole pool, however, is very much *less* acid than either and is, indeed, nearly neutral. Two results are not included in this table although of considerable interest. In one part of the Moss a *Sphagnum* pool and a *Hypnum* pool are quite close together, separated only by a bank of peat about four feet wide. Neither of these is a particularly good example, the *Sphagnum* pool particularly being only very sparsely colonised. The pH value of this pool was 4.0, while that of the *Hypnum* pool was 4.2. These pools, which must to a considerable degree share similar drainage, are thus intermediate in character. It is of interest to note that in this case the *Hypnum* pool appeared to be nearly a foot deeper than the other, although in other cases this difference did not always apply.

Although there seems to be usually more acid water in the *Sphagnum* pools, it is not argued that the difference in pH is necessarily always so pronounced. The principal interest of the difference in pH lies in the evidence it gives that the

water draining into the respective pools is of different origins. The differences themselves might well have been especially pronounced at the time of these observations because they were done during wet weather following a period of prolonged drought. Each of the pools had probably, therefore, received a recent accession of drainage water.

The water draining into pools on Austwick Moss might well belong to one of three main types, each tending to possess a characteristic pH. Firstly, there may be water draining from the highly acid surface peat. This is clearly the type of water found in the shallow '*Oxycoccus* pools,' and probably it predominates in the characteristic *Sphagnum* pools. Secondly, under much of Austwick Moss there is a layer of shell marl. This is particularly evident in the field on the Austwick side and the north-west drain is probably affected by drainage from this source. The water is somewhat calcareous and nearly neutral in reaction. It is suggested that the tadpole pool is deep enough either to reach the layer of shell marl or else to receive much drainage from it. Hence its high pH.

The third type of water present in the area is that draining from sub-aqueous or swamp peat. As long as such peat remains water-logged it is never very acid and it would normally possess a pH above 5.0, probably between 5.2 and 5.5. A layer of peat of this type must cover most of the old lake basin in which Austwick Moss lies. Where it can be examined it lies above the shell marl. The peat in the lowest parts of the *Phragmites-Myrica* zone is clearly of this type and the pH of the water in pools in this zone is quite characteristic of water draining from such a peat. The peat being formed in the large *Comarum* pools, might be expected to have a similar pH, but no doubt the acid drainage from the surrounding surface peat may tend to lower the pH of the water to some extent at least.

The water in the *Hyphnum* pools does not belong to any of these distinct types, but probably represents either the drainage mainly from swamp peat or a mixture of waters from marly layers and acid surface peat. Because only the deeper pools seem to belong to this type, it is probable that the bottom of these pools rests on or receives drainage from swamp peat or marl. The *Sphagnum* pools on the other hand are probably entirely surrounded by acid moor peat. Thus in addition to their acidity, they lack lime and receive organic matter from oxidised peat layers. The *Hyphnum* pools are not only less acid, but must also receive some lime and the products of organic decay from waterlogged peat layers. All of these factors may help in the development of the distinctive floras and faunas.

RARE MARINE FISHES AT SCARBOROUGH

W. J. CLARKE.

ON July 30th, 1938, the local s.t. *Persian Empire* caught in her nets, 30 miles off Scarborough, a large shark, known to the fishermen as a 'Hawkettle'. It measured 16 feet in length and was of stout build. On examination it proved to be an example of the Greenland Shark (*Laemargus borealis*), an inhabitant of the arctic seas which is rarely found as far south as Yorkshire. It has, however, been recorded on at least six previous occasions in county waters, but two of these records appear to be open to some doubt. The Greenland Shark is remarkable for the small size of its fins, and is of sluggish habits. In its native seas it congregates at the whaling stations, feeding on the flesh of the cetaceans, as well as upon fish and crabs. It does not appear to be dangerous to human beings, and the whalers have no fear of it, even if they fall into the water where it is. It is, too, singularly indifferent to danger, and makes no attempt to escape even if attacked with lances, treating its wounds with indifference. This specimen will be placed in the British Museum of Natural History at South Kensington.

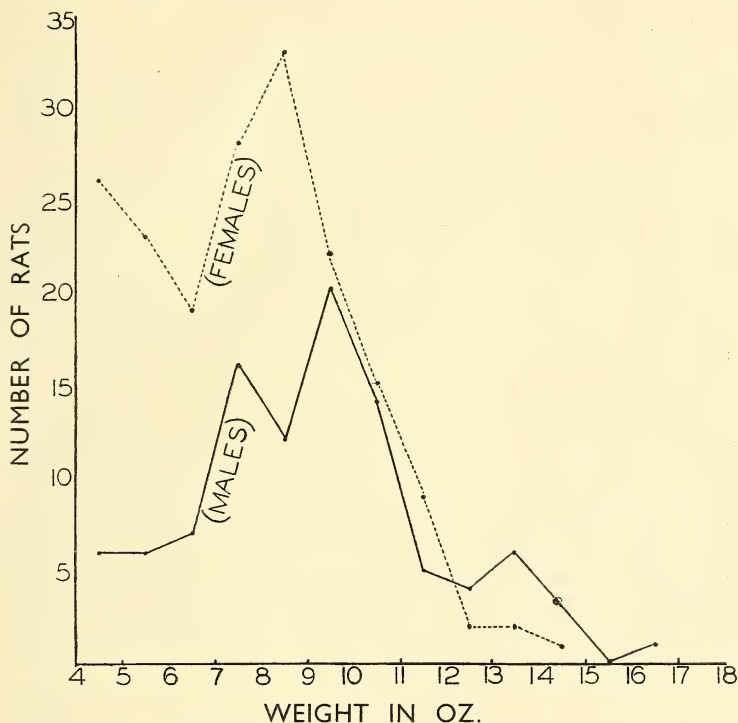
Other interesting sharks recently exhibited at Scarborough were a couple of the Six-gilled Shark, or Comb-toothed Shark (*Notidanus griseus*), a rare visitor to the North Sea from warmer latitudes. These measured 12 feet in each case, and were landed by a Hull trawler, having been caught in Iceland waters. The name is derived from the six gill-slits possessed by this fish, one more than in most other species. The teeth in the lower jaw are of very remarkable structure, each resembling a small comb with about ten denticles. No example of the six-gilled Shark appears to have been recorded off the Yorkshire coast. It is a large fish, having been known to reach a length of over 26 feet.

A less uncommon visitor to the North Sea is a good sized Short Sunfish (*Orthogoriscus mola*), measuring 3 feet 4 inches in length, and 3 feet 11 inches from tip to tip of dorsal and anal fins. This fish wandered into the harbour at Scarborough and was promptly hauled out and placed on exhibition. It is the commonest of the two species which visit the North Sea from the Atlantic Ocean in warm seasons, and reaches a large size, frequently weighing up to half a ton, although specimens of this size are rare in our latitudes. One of the most extraordinary of fishes in appearance, it looks like the head of a fish without the body. It is sluggish in its movements, drifting along with the ocean currents on the surface of the water, with its tall dorsal fin projecting into the air and visible from a long distance, but it can swim strongly if alarmed. The food consists of small floating crustaceans, but there is a record of one caught at Scarborough upon a hook baited with a piece of herring.

WEIGHTS OF BROWN AND BLACK RATS

COLIN MATHESON, M.A., B.Sc.

IN the June number of *The Naturalist* Mr. A. E. Peck, in his note on the weight of rats, asks for information as to record specimens. The following notes, though only one or two of



The weight-distribution of a random sample of Brown Rats over 4 oz. in weight.
Total number of rats, 280; females, 180; males, 100.

them refer to Yorkshire, may be of general interest to readers of *The Naturalist*.

During the past ten or eleven years several thousand specimens of both British rats (the Brown, *R. norvegicus*, and the Black, *R. rattus*) taken by the official rat-catcher in Cardiff have been examined in the Zoology Department of the National Museum of Wales in connection with research on the distribution of the two species and their parasitic Siphonaptera; over a certain period every rat brought in was weighed,¹ while

¹ Details are given in 'The Brown and the Black Rat in Wales' (published by the National Museum of Wales, 1931), and in *Trans. Cardiff Nat. Soc.*, Vol. LXI (1930) pp. 55-56.

records have been kept of any specimens of unusual size and weight brought in subsequently. Of 280 sexually mature Brown Rats weighed during the period in question, only 19 reached or exceeded 12 oz. in weight; the heaviest was a buck of exactly 1 lb., and 13 of the others were also bucks. Of the four does, the heaviest was a gravid specimen weighing 14½ oz. No examples heavier than these have been recorded since.

In March, 1924, however, a buck from the grounds of Cardiff Castle was brought to the Museum and is recorded in the taxidermist's notebook as follows: Weight, 2 lb.; length of body, 280 mm.; length of tail, 220 mm.; maximum girth, 250 mm.

J. G. Millais (*Mammals of Great Britain and Ireland*, Vol. II, p. 219) mentions a buck which he killed weighing 2¼ lb. and measuring 19 inches in length (including tail). In *The Field* of December 19th, 1936 (p. 1574) it is stated that 'the heaviest brown rat (*Rattus norvegicus*) recorded in Britain weighed 2 lb. 12 oz.' This was, it may be noted, a Yorkshire specimen and is also mentioned by Millais (*op. cit.*, p. 220), who states that it was killed in August, 1881, at Malton, and measured 23 inches in length.

The Black Rat and its sub-species, still to be found at various sea-ports in Yorkshire¹ as elsewhere, never reaches weights like these. Of a series of 138 *R. rattus* (which included *R. r. rattus*, *R. r. frugivorus*, and *R. r. alexandrinus*) the heaviest, a buck, weighed 7½ oz. and only seven specimens were more than 7 oz. in weight. According to the note in *The Field* mentioned above, 'The heaviest one of which we have personal knowledge weighed 1 lb. 8 oz.' The maxima, however, given for both species in this country are stated to have been exceeded on the Continent.

Information about record specimens is always interesting; but what many zoologists would welcome still more is information about the *average* weights of adult male and female rats. For example, of the 280 Brown Rats referred to above—180 females and 100 males—the most numerous weight-group among the males was that lying between 9 and 10 oz., whereas it will be seen from the text-figure that the curve for the females commences an abrupt drop after the 8 to 9 oz. group. In the case of the Black Rat the results were very similar—of 23 specimens weighing 6 oz. or over, 15 were males. In general, it was found that the Brown Rat attained a weight almost twice that of the Black, and the predominance of the former at the present day is not surprising.

Another point on which information is greatly needed is

¹ Thus I have records of 1,406 killed in one Yorkshire seaport since 1930; and Mr. T. Sheppard, in a letter to *The Observer*, 28/4/29, described it as quite common at Hull, Middlesbrough, Scarborough and other places.

the ratio of males to females ; published records vary widely,¹ though in most of them the females predominate. From Mr. Peck's note one infers that he has weighed some thousands of rats, and if he has kept records of the weight and sex of each, it is to be hoped that he will publish them or in some way make them available for reference.

CORRESPONDENCE

To the Editors of *The Naturalist*.

SIRS,

A number of your readers are already assisting with the Bird Song Inquiry, organised under the auspices of the British Trust for Ornithology. It has been suggested that the observations on the six selected species should be continued for a second year. There can be no doubt that a comparison of two seasons—in which weather conditions are sure to differ in various ways—will be of much greater value than the records for a single year. Those who are already known to be assisting have received a circular asking for their co-operation for a second year. But Mr. H. G. Alexander, who is organising the inquiry, would be glad to have the co-operation of other observers too, particularly from the north of England. Applications for forms for recording the observations should be made to me.

W. B. ALEXANDER,
University Museum, Oxford.

NEWS FROM THE MAGAZINES

The Entomologist's Record for July/August contains 'Observations on a colony of *Acanthomyops* (*Dendrolasius*) *fuliginosus* Latr., for 23 years,' by H. Donisthorpe ; 'Early stages of Indian lepidoptera,' by D. G. Sevastopulo ; 'Names of Microlepidoptera,' by T. B. Fletcher ; 'Note on a third Argentine mosaic *Colias*,' by K. J. Hayward ; 'Pyralidae and microlepidoptera collected in Cyprus during 1920 and 1921,' by K. J. Hayward ; 'Collecting notes,' 'Current notes,' and supplements 'The British Noctuae and their varieties,' by H. J. Turner, and supplement to the 'Butterfly races and *Zygaenae* of Macedonia,' by R. Verity.

The Entomologist's Monthly Magazine for August contains 'A Preliminary List of the Coleoptera of Windsor Forest,' by H. Donisthorpe ; '*Elatér ruficeps* Muls., a Beetle New to Britain,' by A. A. Allen (Windsor Forest one specimen in wood-mould in an old oak tree) ; 'A Note on *Xantholinus angustatus* Steph. (Col. Staphylinidae),' by W. O. Steel ; 'New species of Staphylinidae from Mauritius and Reunion, collected by Mr. J. Vinson,' by M. Cameron ; 'Passalidae (Coleoptera) from the Cyclops Mountains, Dutch New Guinea,' by W. D. Hincks ; 'A Pterergate of *Acanthomyops* (*Chthonolasius*) *flavus* F. (Hym. Formicidae),' by H. Donisthorpe ; 'The Tachinidae of the Meade Collection,' by C. J. Wainwright ; 'The Mallophaga (Biting lice) recorded from the Pacific Islands,' by G. B. Thompson ; '*Setodes lusitanicus* McL., a caddis fly new to Britain,' by L. W. Grensted (Goring-on-Thames and Oxfordshire) ; 'Corrections and Additions to James Edwards' Catalogue of British Hemiptera Homoptera, Perth, 1908 (excluding Psyllidae,' by W. E. China, and three shorter notes.

¹ See paper by Professor P. A. Buxton in *Journal of Animal Ecology*, Vol. V (1936), pp. 53-66.

RETARDED DEVELOPMENT : *HYLOTRUPES* *BAJULUS*, L.

E. G. BAYFORD, F.R.E.S.

EARLY in November, 1936, a larva was brought to me which had been found in a bedroom under a portable cupboard which had been in use for more than fifteen years. An examination of the latter showed that the larva had been living in the wood and in its tunnelling had eaten through the very thin wall which separated it from the outer world. Having fallen to the floor, the larva could not get back, and in ordinary circumstances would have been destroyed as soon as discovered. In this case it was found by a person with more than the average knowledge of how best to proceed, and as a result it came into my hands. It was then well grown, about $\frac{7}{8}$ in. long, ivory white in colour, and with the constrictions of the segments deeply marked. The formation of the head sufficiently indicated that it was the larva of a *Cerambycid*, and its size ruled out the smaller species; beyond that I know no method of more accurate definition. I obtained the bottom shelf from which the larva had come, and cut it up into pieces of handy size; these were tunnelled throughout and were so thoroughly dry it seemed impossible that any nutriment could remain in it. Despite this the larva ate steadily; this was evident from the quantity of fresh frass, and I had every hope of rearing it to maturity. This activity continued until the autumn of last year, when the quantity of frass sensibly diminished. On placing the wood to my ear it was possible to hear a steady movement inside, which could be stimulated by tapping on the wood with a pencil.

Longicorns frequently, if not generally, emerge from the pupal state in the late autumn and immediately go into hybernation in the pupal chamber, remaining there until May or June, when they cut their way into the outer air. Consequently I was not disappointed when frass ceased to fall and no movement could be detected. I assumed that my guest was hybernating either as larva or perfect insect. But when the fine warm spring of this year went by without any indication of life I began to fear failure, and as May came and went I determined to satisfy my curiosity. On the 7th June I cut up the pieces of wood, carefully examining the tunnels one by one. Out of one of them a dead beetle fell. Fortunately it had not been dead long, and I was able to mount it fairly well. I also found another larva fairly well grown. For this I procured a fresh piece of pine wood which would seem to have more nutritive properties. The larva has taken to this quite readily, and next year may see it emerge a mature beetle.

The species is *Hylotrupes bajulus* L., ♀, for which, to avoid repetition, see p. 73 of this volume.

Like the specimen there referred to, this (although it has lived in this country so many years) is also an imported specimen and would not merit more than a brief note were it not for the remarkable length of time it has taken to mature. From the egg to the mature longicorn beetle four years may be taken as the normal time. Here is a case where at least seventeen years must have elapsed!! The reason or reasons for this extraordinary retardation are far from obvious.

The apparent lack of nutriment in the dry wood cannot, one would think, account for it, rather we should expect starvation and death. Instead we have prolonged life and retarded growth.

The life-histories of wood-feeding larvæ give rise to interesting speculations which are difficult to determine because of the obscurity and retirement in which they are completed. There is, for example, the great variation in size of individuals of the same species. In *Hylotrupes* this ranges from 8 to 20 mm., *i.e.* one specimen may be two and a half times the length of another, both being perfect in every way. This is by no means exceptional. Other Longicorns exhibit this wide range, as does *Sirex gigas* L., an insect belonging to quite a different order. This disparity in size is usually accounted for by supposing that a falling off of the food supply causes the underfed larva to hasten into the pupal stage, and so in due course become a dwarfed adult. This may be so, but somehow it seems to be unsatisfactory and unsatisfying. The problem is being brought before us constantly, and perhaps because of that it does not receive the attention it deserves.

The problem of retardation I have recently referred to (*The Naturalist* for 1937, pp. 118-119) and these remarks should be read in conjunction with what is printed there. The facts here given are surprising enough, but they offer little help, apparently, towards a solution.

Why should larval existence in some cases be prolonged and growth retarded over a period which may be four or five or even more times that taken normally?

The more one thinks about it the more puzzling it appears. Possibly in time some new fact may emerge which will put investigators on the right track. Until then it is our duty to record the facts as and when they occur in the fullest manner possible.

ADDENDUM.

Since the above was in type the larva referred to has become a pupa, and now presents a remarkable difference when compared with its former state. From being a tapering cylinder

in shape in a comparatively short time it became several times broader than thick and the anal segment narrowed and tapered, indicating quite clearly that the beetle was of the female sex. For some little time after the change had commenced a very slight vibration sufficed to set the abdominal segments rotating vigorously but it does so no longer. The colour is still creamy white except for the mandibles which are deep black and the front of the head which is decidedly of an orange hue. Probably there will be little alteration in this respect until the near approach of maturity.

In Memoriam

WILLIAM EAGLE CLARKE, I.S.O., LL.D., F.R.S.E.
1853—1938

It is with regret that we record the death of William Eagle Clarke, who was born at Leeds in March, 1853, and died at Edinburgh on May 10th last, having fallen and broken a leg in a nursing home, where he had been for some years.

Older Yorkshire naturalists will remember the remarkable association of 'Clarke and Roebuck,' which, in the old days, seemed to be as familiar and on somewhat similar lines, but in another sphere, as Gilbert and Sullivan.

Clarke was the field naturalist, who visited all parts of Europe with his camera and gun, and Roebuck, whose eyesight was not suitable for long distance observations, was the chronicler and bibliographer.

Clarke and Roebuck for one period in the history of *The Naturalist* were joint editors, but their monumental work, so far as Yorkshire is concerned, was their 'Vertebrate Fauna of Yorkshire,' published in 1881.

So long ago as 1884, Clarke was the Curator of the Leeds Museum, where he had the advantage of training under the late Professor Miall, and four years later he went to the Royal Scottish Museum at Edinburgh, where he remained until he retired in 1921. He was largely responsible for the excellent arrangement of the Natural History Collections there, and for the many publications bearing upon them. He is perhaps best known to the ornithological world for his researches relating to the migration of birds, in connexion with which he spent many holidays in various lighthouses around the coast, and abroad. He took a prominent part in the work of the Committee on Bird Migration, appointed by the British Association.

In 1912 he published 'Studies in Migration,' in two volumes, which is the standard work on the subject.



John G. Lawrence.

By permission of the Editor of The Ibis.

After leaving Leeds, his editorial work was continued in connexion with the *Annals of Scottish Natural History*, and later *The Scottish Naturalist*. He revised Saunders' 'The Manual of British Birds,' published in 1927, and acted on many committees and government departments relating to the Wild Birds' Protection, the Prohibition of Plumage, etc.

He was President of the British Ornithological Union in 1918, was an honorary member of the American Ornithological Union, and received the degree of LL.D. of the St. Andrew's University.

In *The Ibis* for June, his life-long friend, Mr. N. B. Kinnear, contributes an intimate account of Clarke's work, and as Mr. Kinnear knew him personally and was frequently with him on excursions, we are taking the liberty of quoting the following record of Dr. Clarke's trips abroad, taken from this notice:—

'In 1884 he went to Iceland with James Backhouse, and was one of the first British ornithologists to study birds there in the autumn (*Ibis*, 1885, pp. 364-380). Other trips were to Dutch Brabant (*Naturalist*, 1880), Slavonia and Hungary (*Ibis*, 1884, p. 125), and to Andorra (*Ibis*, 1889, p. 520). In 1894 and 1896 he went with his lifelong friend, T. G. Laidlaw, to the Rhone Valley (*Ibis*, 1895, p. 173, and 1898, p. 465). During these expeditions he proved that the Rhone Valley was a highway of migration, and was enabled to show that the food of the Flamingo is the brine-shrimp (*Artemia salina*). He was specially interested in Arctic ornithology, and wrote papers on collections from Hudson's Bay, Jan Mayen, and Franz Josef Land. In *The Ibis* for 1894-1900 he contributed papers on collections of birds from the Island of Negros, Philippines, and therein described a new Pigeon (*Phalaenas keayi*), still little known. Dr. Clarke's most important systematic work, however, was the series of papers dealing with the ornithological results of the Scottish Antarctic Expeditions to Gough Island (*Ibis*, 1905, p. 247), the South Orkneys (*Ibis*, 1906, p. 145), and the Weddell Sea (*Ibis*, 1907, p. 325), from which localities he described several new species.'

Reference has been made to the remarkable joint work of Eagle Clarke and W. D. Roebuck. The latter died in 1919, and a full account of his literary and scientific achievements appears in *The Naturalist* for April, 1919, pp. 143-9.

As a personal note, may I add that it was the encouragement of these two, when I was still in my 'teens, that enabled me to carry out the bibliographical work which I started in 1893, and have kept up until quite recently.

We are indebted to the Editor of *The Ibis*, and to Messrs. Elliott & Fry, Ltd., London, for permission to reproduce the photograph.

T. S.

JASPER ATKINSON

(Died July 25th, 1938, aged 80 years)

THE Vertebrate Section of the Y.N.U. has lost a familiar figure, a beloved personality, whose modesty and kindness endeared him to all.

Joining the Union in 1907, for thirty years Jasper Atkinson never missed a meeting of the Vertebrate Section. A year or two later, as an Associate, I attended my first meeting and thought that no one there would know me. But when the meeting adjourned, a tall, spare figure with a smiling face came round to me to say, 'Didn't I meet you at Ravensglass? Come along and have tea with us.' It was typical of him, and from that day we were firm friends.

Atkinson gave no learned papers, but meetings were often rendered more attractive by displays of his slides of wild birds; and by his witty and sound remarks. Which of us does not remember his Gannets, Gulls, and Guillemots; his Roseate and other Terns, his Reeves, Curlews, Turnstones, and scores of other species? Perhaps his most beautiful photograph represented a pair of Black-tailed Godwits. Scientific ornithology appealed to him but mildly. He was a bird lover, and never so happy as when curled up in a hiding-place, with his pipe, and some rare or common bird before him. At the same time his knowledge of birds was wide, and his comments in discussion invariably sound.

Among bird photographers he was a pioneer who worked more than any other with Mr. Riley Fortune. Others of his companions in the field included the late Richard Kearton, the late Dr. F. Heatherley, the late G. A. Booth, Mr. C. J. King, and the writer. In Öland, in 1924, at the age of 66, we found him as keen as a boy; yet he was entirely uncompetitive. The Farne Islands knew him, and Scilly, Texel, Öland, and Wharfedale were places where he did much work.

Although for many years an active member of the Leeds Photographic Society, Atkinson's best work on behalf of others was done as Hon. Secretary of the Zoological Photographic Club, of which he subsequently became President. During those twenty-two years he lived largely for the Z.P.C., and did more than anyone to improve the standards of work and to help bird-students who wished to become capable photographers. His photographic knowledge and skill were very considerable. As straight as a die himself, he abhorred every kind of 'fake,' and never quite forgave any who allowed photographs of captive birds to masquerade as 'taken wild.' During this time he knew every photographer of birds; no published work evaded his notice; he could give at once the authorship and quality of practically every photograph of

European birds then in existence, and his services to *Wild Life*, *Country Life*, and other journals were many. His own contributions to such journals were always accurate, readable, and well illustrated.

Mr. Riley Fortune writes : ' We were intimate friends for nearly half a century, and I pride myself that I introduced him to the Y.N.U. and to the Z.P.C.

' I have journeyed with him on numerous occasions, sometimes just the two of us, sometimes also with H. B. B., and at other times with a party. Over moor and fell, by the lake, or riverside, on lonely shores and marshes, on bird-crowded islands, and in the forest lands ; always J. A. was the same, a perfect companion, unselfish, and at all times eager to do the other fellow a good turn.

' As one advances in years, one continually grieves at the passing of old and dear friends, and it is with deepest sorrow one has to realise that our journeys are at an end. May he rest in peace.'

J. A. was an artist in stained glass. Birds and music charmed him. A cricketer in his youth, he followed Yorkshire cricket with zest all his life, in which ' cricket ' was his standard. He will best be remembered as an unassuming, natural gentleman, with a twinkling eye and a kindly wit, who was ever kind to youth, whom even to the end he would greet as equals. He lived and died a bachelor.—R. C.

MANX LEPIDOPTERA

I am collecting particulars with regard to the occurrence and distribution of the Manx butterflies and moths, with a view to the publication of a Catalogue of Manx Lepidoptera.

Any records or unpublished notes will be welcome, especially with regard to the micro-lepidoptera. Any information will, of course, be acknowledged.—W. S. COWIN, ' Kenwood,' Brunswick Road, Douglas, Isle of Man.

New Derbyshire localities for *Osmylus fulvicephalus* Scop.—The Large Spotted Lacewing, *Osmylus fulvicephalus* Scop., has been recorded from three localities in South Derbyshire, but not yet from the northern part of the county. During last March, while working the streams, I came across the very characteristic and unmistakable larvæ under stones resting on the mud by the stream side in Cordwell Valley (Barlow Brook), 14/3/38; in Ford Valley, 17/3/38; and in Ryecroft Glen, 22/3/38, all in north-east Derbyshire. The adult insects were unfortunately missed owing to absence from the district during the greater part of their season, but a single specimen was disturbed in Ecclesall Wood as late as 22/7/38.—JAMES M. BROWN, Sheffield.

THE TRICHOPTERA OR CADDIS-FLIES OF YORKSHIRE

JAMES M. BROWN, B.Sc., F.R.E.S., AND H. WHITEHEAD, B.Sc.

As has been noted when dealing with several other minor orders of insects recently, there have been few workers in Yorkshire specialising in the Trichoptera or Caddis-flies. From 1881 to 1914 the late G. T. Porritt published a series of notes in *The Naturalist* and other entomological journals dealing with insects of his own collecting and those received from numerous correspondents, and these notes laid the foundation to our knowledge of the Yorkshire Trichoptera. Most of these insects are now preserved in the Porritt Collections, which are housed in the Tolson Memorial Museum, Huddersfield. We should like to express our thanks to Dr. Grainger for permission to examine the insects, and to Miss Gallwey for assistance. The Porritt collection of insects has been briefly described in *The Naturalist*, (1927, pp. 132-133.). The Trichoptera are arranged in eleven drawers and comprise over 3000 specimens. The specimens are fully labelled with locality, date and collector. The majority of specimens are from Yorkshire, but many are from other parts of Great Britain. The collection includes only a few examples of the Hydroptilidae or micro-trichoptera, but not a single specimen from Yorkshire.

This collection has been carefully worked over, and all the county records noted. These are referred to in the following list as 'G.T.P. Coll.', and where no initials are given to these it can be taken that the specimen was collected by Porritt.

In addition the various entomological journals have been examined for records, and it is believed that the list that follows gives a fairly accurate estimate of the known distribution of caddis-flies in the county. All the records given have reference to adult insects only, determinations of larvae being frequently somewhat doubtful.

To the pages of the *Entomologist's Monthly Magazine*, the *Entomologist* and *The Naturalist*, we are indebted for records, and Dr. Fordham's 'Bibliography' (*Trans. Soc. Brit. Ent.*, 1935) has again proved of great assistance.

We are also indebted to many Yorkshire entomologists for supplying us with lists of their captures, or for specimens for identification, especially to Dr. W. J. Fordham, Messrs. W. D. Hincks, J. R. Dibb, J. Wood and H. Britten. In addition to these naturalists, the following collectors of specimens are referred to by initials : A. E. Hall, B. Morley, Rev. C. D. Ash, E. G. Bayford, E. Percival, F. G. Binnie, G. Bruce, G. C. Dennis, G. Jackson, G. L. Mosley, G. T. Abbott, G. W. Kilun-Curland, J. Harrison, M. E. Mosely, R. Butterfield, R. McLachlan, T. A. Lofthouse, W. Cash, W. E. L. Wattam,

W. G. Bainbridge, W. Hewett, W. Mansbridge, P. H. Grimshaw and J. H. Rowntree.

Previous complete lists of Yorkshire Trichoptera are those of G. T. Porritt. That published in *The Naturalist*, 1897, pp. 120/125), contained 79 species, that in the *Victoria County History of York*, Vol. I, 1907, has references to 93 species, while in the present communication 118 species occur, and it is to be hoped that in the near future further additions may be made.

LIST OF SPECIES

Order—TRICHOPTERA

Family—PHRYGANEIDAE

Neuronia ruficrus Scop.

V.C. 61. E. Yorks. (G.T.P. Coll., -/95, W.H.). Bubwith, -/19 (W.J.F.).

V.C. 63. Skelmanthorpe (G.T.P. Coll., -/00, B.M.). Wharnccliffe Craggs, Sheffield (G.T.P. Coll., 1/6/99). Dodsworth, Barnsley (G.T.P. Coll., -/91, J.H.). Green Farm Wood, Doncaster (G.T.P. Coll., 6/6/92, J.H.).

V.C. 64. Bramhope Ponds, 9/4/24 (H.W.).

Phryganea grandis L.

V.C. 61. Melbourne (G.T.P. Coll., 7/6/00, W.H.).

V.C. 62. Castle Howard (G.T.P. Coll., -/90, G.C.D.).

V.C. 63. Keighley, 16/7/31 (J.W.).

V.C. 64. Askham Bogs (G.T.P. *Vict. Hist.*).

P. striata L.

V.C. 61. E. Yorks. (G.T.P. Coll., -/95, W.H.). Bubwith, -/16 (W.J.F.).

V.C. 62. Castle Howard (G.T.P. Coll., 6/97).

V.C. 63. Bradford and Sheffield (G.T.P., *Vict. Hist.*). Wharnccliffe Woods, Sheffield, -/97 (G.T.P.). Huddersfield, Crossland Hall (G.T.P. Coll., -/95, -/98). Dogley Reservoir (G.T.P. Coll., 14/6/89). Kirkheaton (G.T.P. Coll., 24/5/90). Meltham Mills (G.T.P. Coll., 6/00). Skelmanthorpe (G.T.P. Coll., 5-6/96, B.M.). Keighley, 5/6/35, 31/7/31, 15/6/33 (J.W.).

V.C. 64. Castle Woods, Skipton, 6/6/26 (E.P.). Scarcroft Pond, Thorner (H.W.). Hambleton, nr. Selby, 6/15 (G.T.P.). Bramhope, 12/6/26 (W.D.H.). Skipton, 6/6/36 (J.M.B.).

P. obsoleta McL.

V.C. 62. Fylingdales Moor, 13/7/35 (H.B.).

V.C. 63. Keighley (G.T.P. Coll., 8/18, R.B.), 31/7/31 (J.W.). Ringinglow, Sheffield, 23/8/34 (J.M.B.).

V.C. 64. Mossy Moor Res., Hebden, 26/7/29, 8/7/30 (W.G.B.).

P. varia Fabr.

V.C. 61. Skipwith (G.T.P. Coll., -/88, -/95, C.D.A.).

V.C. 63. Bradford and Thorne Moor (G.T.P. *Vict. Hist.*). Healey How, Huddersfield (G.T.P. Coll., -/95). Barnsley (G.T.P. Coll., 9/7/97, E.G.B.).

V.C. 64. Malham Tarn, 3/8/25 (E.P.).

P. minor Curt.

V.C. 61. Skipwith (G.T.P. Coll., 1901, C.D.A.).

V.C. 64. Askham Bogs (G.T.P. Coll., 8/91, G.C.D.). Ilkley, 22/6/24 (H.W.).

Family—LIMNOPHILIDAE

Colpotautilus incisus Curt.

- V.C. 61. Hornsea, 6/08 (G.T.P.). Bubwith, 1917, Brighton, 9/15, East Cottingwith, 17/6/16 (W.J.F.).
 V.C. 63. Shipley Mill Dam, Huddersfield (G.T.P. Coll., 25/7/98, 20/8/98). Fairburn, 16/6/34 (J.M.B.).
 V.C. 64. Askham Bogs (G.T.P. Coll., 13/8/98). Askham Bogs, 27/7/31 (J.W.).

Grammotaulius atomarius Fabr.

- V.C. 61. Everingham (G.T.P. Coll., 1897, W.H.). Skipwith (G.T.P. Coll., 6/03, C.D.A.). Filey (G.T.P. Coll., 14/6/14).
 V.C. 63. Thorne (G.T.P. Coll., 26/5/80). Shipley Mill Dam, Huddersfield (G.T.P. Coll., 12/8/98). Haw Park, Wakefield (G.T.P. Coll., 1910, G.B.). Wharnccliffe, 26/6/20 (W.J.F.). Ecclesall Wood, Sheffield, 20/8/37 (J.M.B.).
 V.C. 64. Askham Bogs (G.T.P. Coll., 9/88, G.C.D., 14/7/92, G.T.P.). Bishop's Wood, Selby (G.T.P. Coll., 14/8/87).

Glyphotælius pellucidus Retz.

- V.C. 61. Everingham (G.T.P. Coll., 1897, W.H.). Hornsea, 6/08 (G.T.P.). Skipwith (G.T.P. Coll., 1888, 6/03, 5/04, C.D.A.). Driffeld Ings, 13/6/17 (W.J.F.).
 V.C. 62. Castle Howard (G.T.P. Coll., 22/6/96). Kildale (G.T.P. Coll., 4/8/13). Mulgrave Woods, 3/8/36 (H.B.). Hovingham, 5/8/35, Robin Hood's Bay, 17/37 (J.M.B.).
 V.C. 63. Bretton Park, Wakefield (G.T.P. Coll., 25/5/89, W.G.K.C.). Haw Park, Wakefield (G.T.P. Coll., 27/8/00). Harden Clough, Huddersfield (G.T.P. Coll., 25/6/01).
 V.C. 64. Tadcaster (1880, F.G.B.). Bishop's Wood, Selby (G.T.P. Coll., 9/88, G.C.D., 6/6/03, G.T.P.). Askham Bogs (G.T.P. Coll., 21/5/90), 18/8/32 (J.W.), 13/6/31 (W.D.H.). Ripon, 8/8/33 (J.M.B.). The Hollies, Leeds, 6/26, (H.W.).

Limnophilus rhombicus L.

- V.C. 62. Castle Howard (G.T.P. Coll., 20/6/95, 27/6/97). Fen Bog (Goathland), 11/7/37 (H.B.).
 V.C. 63. Bradford (G.T.P., *The Naturalist*, 1897). Huddersfield, Crosland Hall (G.T.P. Coll., 8-11/94, 28/6/98). Wakefield, 6/10 (G.T.P.).
 V.C. 64. Tadcaster, 1880 (F.G.B.).

L. flavicornis Fab.

- V.C. 61. Everingham (G.T.P. Coll., 1898, C.D.A.). Bubwith, 7/17, 9/17 (W.J.F.).
 V.C. 63. Thorne (G.T.P. Coll., 12/9/80), 31/7/90 (J.H.). Sprotborough, 2/8/37 (J.M.B.).
 V.C. 64. Askham Bog (G.T.P. Coll., 6/89, G.C.D.). Chandler's Whin (G.T.P. Coll., 14/7/22). Bishop's Wood, Selby (G.T.P. Coll., 19/6/85). Hambleton, 6/15 (G.T.P.).

L. marmoratus Curt.

- V.C. 61. Skipwith (G.T.P. Coll., -/98, -/02, C.D.A.).
 V.C. 63. Thorne Moor (G.T.P. Coll., 13/9/80), 16/7/90 (J.H.). Wharnccliffe Woods (G.T.P. Coll., 23/7/82, 3/8/96). Keighley, 10/10/36 (J.W.).

Limnophilus stigma Curt.

- V.C. 61. Bubwith, 17/6/16, Skipwith, 22/8/16, Melbourne, -/19, Menthorpe, 28/7/18, 9/9/16 (W.J.F.).
 V.C. 62. Hovingham, 5/8/35, Runswick Bay, 15/9/36 (J.M.B.).
 V.C. 63. Huddersfield, Shipley Mill Dam (G.T.P. Coll., 25/7/98, 20/9/98), Skelmanthorpe, -/97 (B.M.).
 V.C. 64. Askham Bog (G.T.P. *Vict. Hist.*).
 V.C. 65. Bowes (G.T.P., *Vict. Hist.*).

L. xanthodes McL.

- V.C. 62. Castle Howard (G.T.P. Coll., 22-27/6/96). (One specimen only.)
 V.C. 64. Askham Bog, 21/5/34 (J.W.).

L. lunatus Curt.

- V.C. 61. Beverley (G.T.P. Coll., 9/83, W.H.). Driffield, 12/10/30, 14/9/30, 28/9/30 (H.W.), 8/29 (J.M.B.).
 V.C. 62. Castle Howard, 15/9/92 (G.T.P.).
 V.C. 63. Crosland Hall, Huddersfield (G.T.P. Coll., 28/9/96). Thorne, (G.T.P. Coll., 13/9/90), 16/7/90 (J.H.). Askern (G.T.P. Coll., -/00). Haw Park, Wakefield (G.T.P. Coll., -/98, B.M.). Keighley, 9/9/33 (J.W.). Ecclesall Wood, Sheffield, 10/10/35 (J.M.B.).
 V.C. 64. York (G.T.P., *The Naturalist*, 1897). Newton Kyme, Stutton, -/80 (F.G.B.). Gisburn, 5/9/33 (W.G.B.). Austwick, 28/8/20 (W.J.F.).
 V.C. 65. Semerdale, 9/35 (J.M.B.).

L. politus McL.

- V.C. 63. Wakefield, Haw Park (G.T.P. Coll., 17/9/08, B.M., 9/10, G.B., 10/10, B.M.).
 V.C. 64. Tadcaster (G.T.P. Coll., -/11, C.D.A.).

L. nigriceps Zett.

- V.C. 61. Driffield, 12/10/30 (H.W.).

L. centralis Curt.

- V.C. 62. Kildale, 5/8/13 (G.T.P.). Ravenscar, 7/6/24 (P.H.G.), 26/6/37 (J.M.B.). Robin Hood's Bay, 21/6/89 (J.H.R.), 26/6/36, 10/9/36, 14/6/37 (J.M.B.). Sandsend 11/9/36 (J.M.B.). Fen Bog (Goathland), 11/7/37, Helwath Beck, 26/9/37, Hole of Horcum, 27/6/37, Wragby Wood, 6/6/36, 20/8/36 (H.B.).
 V.C. 63. Huddersfield, Greenfield (G.T.P. Coll., 16/6/88, 11/6/97). Grimscar (G.T.P. Coll., 6/88, G.W.K.C.), Crosland Hall (G.T.P. Coll., -/96). Deffer Wood (G.T.P. Coll., -/97, B.M.). Wheatley Wood (Doncaster) (G.T.P. Coll., 25/5/90). Silsden, 31/7/31 (J.W.). Ecclesall Wood (Sheffield), 7/9/36, 14/7/37 (J.M.B.).
 V.C. 64. Askham Bog (J.W.). Malham, 3/7/31 (J.M.B.).
 V.C. 65. Cronkley, 1/6/25 (W.J.F.). Semerdale, 27/7/35, Stalling Busk, 28/7/35 (J.M.B.).

L. vittatus Fab.

- V.C. 61. Skipwith (G.T.P. Coll., -/98, C.D.A.), 22/8/16 (W.J.F.). Bubwith, -/19 (W.J.F.). Allerthorpe, 2/8/36 (J.M.B.).
 V.C. 62. Sandburn (G.T.P. Coll., 22/7/89). Saltburn (G.T.P. Coll., 11-25/8/86). Guisborough, 18/8/06 (G.T.P.).
 V.C. 63. Huddersfield, College Field (G.T.P. Coll., 9/80, G.W.K.C.), Crosland Hall (G.T.P. Coll., -/85). Skelmanthorpe (G.T.P. Coll., -/98, B.M.). Tren Farm Wood, Doncaster (G.T.P. Coll., 6/6/92, J.H.). Wakefield, Haw Park (G.T.P. Coll., 27/8/10), Ryhill (G.T.P. Coll.,

- 24/9/25, E.G.B.). Barnsley (G.T.P., *The Naturalist*, -/97). Ecclesall, Sheffield, 29/5/38, (J.M.B.).
- V.C. 64. Newton Kyme, Tadcaster, -/80 (F.G.B.). Gisburn, 8/31 (W.G.B.). Askham Bog (G.T.P. Coll., 21/6/90). Moortown, Leeds, 6/38 (H.W.).
- Limnophilus affinis* Curt.
- V.C. 61. Brough (G.T.P. Coll., 27/5/01). Hornsea Mere (G.T.P. Coll., 20/5/00, W.C.).
- V.C. 62. Saltburn (G.T.P. Coll., 11-25/8/86). Redcar (G.T.P.). Maw Wyke, 16/9/36, Sandsend, 22/9/36 (J.M.B.).
- V.C. 63. Haw Park, Wakefield (G.T.P. Coll., -/08, B.M.). Huddersfield, Crosland Hall (G.T.P. Coll., -/95), Meltham (G.T.P. Coll., 2/8/20).
- V.C. 64. York (G.T.P. Coll., -/95, W.H.). Selby, 11/7/31 (J.M.B.).
- L. auricula* Curt.
- V.C. 61. Hornsea (G.T.P. Coll., 1/6/08). Riccal Common (G.T.P. Coll., 4/5/12, W.E.L.W.). Skipwith, 22/8/16, 4/6/17 (W.J.F.), 12/5/33 (J.M.B.). Eskrick, 25/5/17, E. Cottingwith, 20/5/18, Frog Hall, 29/5/30, Bubwith, 9/09, 23/5/18 (W.J.F.). Allerthorpe Common, 28/5/31, 1/5/36 (J.W.), 8/32, 2/8/36 (J.M.B.). Millington, 1/8/36, Kilnwick Percy, 3/8/36 (J.M.B.).
- V.C. 62. Castle Howard (G.T.P. Coll., 6/96). Kildale (G.T.P. Coll., 2/8/13), Whitby, 19/5/36, Helwath Beck, 26/9/37 (H.B.). Helmsley, 3/9/35, Hovingham, 5/8/35, Robin Hood's Bay, 3/7/37, 25/6/37 (J.M.B.).
- V.C. 63. Thorne (G.T.P. Coll., 13/9/90). Doncaster, Edlington Wood (G.T.P. Coll., 2/5/20), Martin Beck Wood (G.T.P. Coll., 19/6/20). Harden Clough, Huddersfield (G.T.P. Coll., 3/8/01). Keighley, 4/8/34 Ryhill, 8/34 (J.W.). Ecclesall Wood, Sheffield, 20/8/37, Sprotborough, 2/8/37 (J.M.B.).
- V.C. 64. York (G.T.P. Coll., -/95, W.H.). Askham Bog (G.T.P. Coll., 1/9/88, 31/5/90, G.C.D., G.W.J., G.T.P.). Bishop's Wood (G.T.P. Coll., 25/5/96). Newton Kyme, Tadcaster, -/97 (F.G.B.). Askham Bog, 18/8/32 (J.W.). Skipton, 8/32, Selby, 11/7/31 (J.M.B.).
- L. griseus* L.
- V.C. 61. Everingham (G.T.P. Coll., 12-19/8/24, C.D.A.), -/97 (W.H.). Allerthorpe, 28/5/31, 8/7/31 (J.W.), 2/8/36 (J.M.B.). Bubwith, 5/16, 3/6/17, 4/15, 5/18, Skipwith, 22/8/16, 12/5/33 (W.J.F.).
- V.C. 62. Strensall (G.T.P. Coll., -/97, W.H.). Kildale (G.T.P. Coll., 2-4/8/13).
- V.C. 63. Thorne, *The Naturalist*, -/97 (G.T.P.). Wharnccliffe (G.T.P. Coll., 18/6/88, G.T.A.). Huddersfield, Dunford Bridge (G.T.P. Coll., 18/6/95, R.McL.). Birkby (G.T.P. Coll., 2/6/17). Ecclesall Wood, Sheffield, 14/7/37, Sprotborough, 2/8/37 (J.M.B.). Martin Beck Wood, nr. Doncaster (G.T.P. Coll., 19/6/20).
- V.C. 64. Askham Bog (G.T.P. Coll., -/88-90, G.C.D. and G.J.). Bishop Wood (G.T.P. Coll., 25/5/96). Tadcaster, -/97 (F.G.B.).
- V.C. 65. Keld, 17/5/37 (J.M.B.).
- L. bipunctatus* Curt.
- V.C. 61. Skipwith (G.T.P. Coll., 30/8/97, -/01, 9/03, C.D.A.).

Limnophilus extricatus McL.

V.C. 61. Driffield (H.W.).

V.C. 62. Castle Howard (G.T.P. Coll., 2/7/92). Warrenby, 7/7/17 (W.J.F.).

V.C. 63. Huddersfield, Sheard's Farm, Kirkheaton (G.T.P. Coll., 14/6/89, 24/5/90). Crosland Hall (G.T.P. Coll., -/94, -/98). Skelmanthorpe (G.T.P. Coll., -/96, B.M.).

V.C. 64. Askham Bog (G.T.P. Coll., 6/82, G.C.D.). Meanwood Beck, 4/6/31, Adel, 11/6/31 (W.D.H.).

L. hirsutus Pict.

V.C. 62. Castle Howard (G.T.P. Coll., 2/7/92). Saltburn (G.T.P. Coll., 11-15/8/86).

V.C. 63. Askern (G.T.P. Coll., 25/7/91). Kirkheaton (G.T.P. Coll., 22/8/18, 6/6/19). Strines, nr. Sheffield (G.T.P.) (E.M.M., 1908, p. 185).

L. luridus Curt.

V.C. 61. Skipwith (G.T.P. Coll., -/98, C.D.A.). Allerthorpe, 31/7/34 (J.W.).

V.C. 62. Hole of Horcum, 27/6/37 (H.B.). Ramsdale (Robin Hood's Bay), 8/7/37 (J.M.B.). Sandburn (G.T.P. Coll., 6/8/94, G.T.P. and G.C.D.).

V.C. 63. Harden Moss Moor (G.T.P. Coll., 20/6/98). Martin Beck (G.T.P. Coll., 19/6/20, W.J.F.).

V.C. 64. Askham Bog (G.T.P. Coll., 12/8/98). Fewston Reservoir, Blubberhouses, 10/7/37 (H.W.).

L. sparsus Curt.

V.C. 61. Everingham (G.T.P. Coll., 12-15/8/88, C.D.A.). Skipwith (G.T.P. Coll., 9/97, -/98, C.D.A.). Barmby Moor, 22/7/28 (W.J.F.). Allerthorpe Common, 16/8/25, 11/7/31 (W.J.F.), 2/8/36 (J.M.B.). Melbourne, -/19, Bubwith, 27/5/10, 9/17, 18/5/18 (W.J.F.).

V.C. 62. Sandburn (G.T.P. Coll., 22/7/89, 31/5/90). Saltburn (G.T.P. Coll., 11-15/8/86). Lealholm, 13/5/95 (G.T.P.). Kildale (G.T.P. Coll., 2/8/13). Goathland, 1/6/36, 30/9/37, Mulgrave Wood, 24/9/37, Sleights, 29/9/37 (H.B.). Robin Hood's Bay, 26/6/36, 14/6/37, Sandsend 11/9/36 (J.M.B.).

V.C. 63. Huddersfield, Netherton Wood (G.T.P. Coll., 6/87, 7/80), Kirkheaton (G.T.P. Coll., 3/7/18), Skelmanthorpe (G.T.P. Coll., -/91, 5/97, B.M.), Pennyspring Wood (G.T.P. Coll., 10/8/97), Crosland Hall (G.T.P. Coll., -/98), Harden Moor (G.T.P. Coll., 8/98), Dunford Bridge (G.T.P. Coll., 1/8/98). Martin Beck Wood, nr. Doncaster (G.T.P. Coll., 19/6/20). Bretton Park, Wakefield (G.T.P. Coll., 25/5/89, G.W.K.C.). Sheffield, Ecclesall Wood, 14/7/37, Wyming Brook, 11/8/37, 14/9/37, 22/9/37 (J.M.B.).

V.C. 64. Askham Bog (G.T.P. Coll., 22/7/89, 31/5/90). Bishop's Wood (G.T.P. Coll., 25/5/96, 14/8/97), 11/7/31 (J.M.B.). Blubberhouses, 10/7/37 (H.W.). Askham Bog, 13/6/31 (J.W.).

V.C. 65. Dent, 6/6/33, Semerdale, 8/35, 9/35 (J.M.B.). Middleton-in-Teesdale, 31/5/35 (W.J.F.).

L. fuscicornis Ramb.

V.C. 62. Castle Howard (G.T.P. Coll., 2/7/92, 22-27/6/96).

V.C. 63. Bradford (G.T.P. Vict. Hist.). Wakefield (G.T.P. Coll., 6/89, G.L.M.). Meltham Mill, Huddersfield (G.T.P. Coll., 4/7/00).

(To be continued)

YORKSHIRE NATURALISTS AT ASKERN

June 25th, 1938

SHIRLEY POOL is now the attraction of the Askern neighbourhood for field naturalists, and most of our members made that the starting point for their investigations, and what seemed a very poor beginning at Askern station turned out to be a successful meeting. The Entomological Section had accepted this as their special meeting, and their report of the work done will appear separately. Our Vertebrate Section evidently had little interest in the area, but from the many platforms around the edge of the marshy Carr later in the day the number of fishing rods seemed fair evidence that some species of fish are to be had here by those who will sit and wait.

At the meeting, where our Vice-President, Mr. E. G. Bayford, was in the Chair, some interesting reports were presented, and hearty votes of thanks were passed to the Divisional Secretary; Dr. J. Grainger, to the Rev. M. Yate Allen, who had made most of the arrangements and who led the party, putting his local knowledge at everyone's disposal, and also to Major E. L. S. Anne for kind permission to visit any part of the Burghwallis Estate.

Conchology.—Mrs. E. M. Morehouse writes: Mr. and Mrs. Thurgood took in Shirley Pool the following: *Planorbis umbilicatus* Müller, *P. spirorbis* L., *P. vortex* L., *P. contortus* L., *P. fontanus* Lightfoot, *Limnæa pereger* Müller, *Segmentina nitida* Müller, *Physa fontinalis* L., *Aplecta hypnorum* L., *Bythinia leachii* Sheppard, *B. tentaculata* L., *Succinea putris* Risso, *Pisidium subtruncatum* Malon., *P. nitidum* Jenyns, *P. milium* Aucutt. The last four species are new records for the Pool.

An interesting find in the ditch along Rushy Moor Lane, along with *Limnæa pereger* Müller, the living snails, which were there in very large quantities, were the numbers of empty shells and numerous complete and uninjured bodies of adult *Limnæa pereger* Müller. An explanation advanced at the meeting for records was that the molluscs had been through one or other of the pumps along the length of the ditch, the machinery having crushed the shells and allowed the bodies to drift through.

Flowering Plants.—Mr. A. Malins Smith writes: The following plants found seem worthy of record: *Carex pseudo-cyperus* L., *Cladium Mariscus* Br., *Lastrea Thelypteris* Bory., *Calamagrostis lanceolata* Roth., *Ranunculus lingua* L., *Veronica anagallis-aquatica* L., *Lysimachia vulgaris* L., *Rhamnus Frangula* L., *R. catharticus* L., *Rumex Hydro-lapathum* Huds., *Senecio erucifolius* L., *Alopecurus myosuroides* Huds., *Cerastium viscosum* L., *Stellaria aquatica* Scop., *Myriophyllum spicatum* L., *Hippuris vulgaris* L., *Ranunculus heterophyllus* Weber, *Ophioglossum vulgatum* L.

Perhaps the most interesting of these is *Carex pseudo-cyperus* L., a rare species in the West Riding and one which Lees thought was probably decreasing, an opinion he was inclined to state sometimes without sufficient evidence, with regard to several plants of our flora. He added to the record 'Askern, 1843. *P. Inchbald*' the note 'perhaps now extinct.' It was, therefore, interesting to find it present in 1938, though in small quantity. *Cladium Mariscus* Br. was also recorded by Inchbald. It was not until about twenty years later that *Lastrea Thelypteris* was recorded for a bog at Askern, which must have been our Shirley Pool locality. *Lysimachia vulgaris* L. is the subject of one of the earliest plant records of Yorkshire, the entry 'By Shirley Pool neere Rushie meer' being found in How's *Phytologia Britannica* published in 1650. It is still common there and was found growing abundantly in a part of

the wood which had been subject recently to a destructive fire. Incidentally, I believe this entry to be the only time Shirley Pool is mentioned by name in Lees' flora. *Ranunculus lingua* L. is not recorded for Askern in the flora, though as the list in our circular showed, it was known to occur. Neither is there any record in Lees' flora for *Calamagrostis lanceolata* Roth. at Askern and only one in the whole Don drainage area.

A few of the plants not found and formerly recorded may be noted. A sedge is recorded from Askern lake border as *C. distans* L., which was labelled in the herbarium of G. Harrison as *C. binervis* Sm. Newbould and Lees both judged the specimen to be *distans* and it is so recorded in the flora. We did not see any such sedge of either species, nor did we find *C. teretiuscula* Good nor *C. vesicaria* L., both on record for Askern. Other recorded plants not found were *Ranunculus arvensis* L., *Parnassia palustris* L., *Anagallis tenella* Murr., *Hottonia palustris* L., and *Samolus Valerandi* L., to name only those which should have been evident at the date of our visit. Two absentees from the list of plants given in our circular may be noted. *Enanthe crocata* L., a rather surprising absentee in the ground covered, and *Galium uliginosum* L. In the absence of any Askern record in the flora for this plant and the possibility of confusion of species, it is desirable that this record should be carefully confirmed. Too much, of course, must not be made of the record 'not found,' for only a limited portion of the Askern district was visited and the search may not have been sufficiently thorough.

Ecology.—The waters of Shirley Pool were neutral in reaction and its encircling vegetation had general similarities to that of some of the fens of Hell Kettles (Durham) and Hornsea Mere. The outstanding feature was that *Cladium Mariscus* Br. was, round a considerable part of its shores, the pioneer coloniser of the reed-swamp. Its rhizomes, creeping in the mud, grew out toward the open water and their course could be told by the successively younger aerial shoots they bore. Thus they fulfilled the same rôle in this reed-swamp to that played by *Phragmites communis* Trin., the reed-grass, in many other localities, notably in the Broads of Norfolk. Here at Shirley Pool, indeed, the margin was occupied by *Phragmites* for at least half of its circumference. *Cladium* is a plant whose optimum growth (Godwin, Conway) occurs in waterlogged soils, in situations free from shade and in waters of a non-acid reaction. It may obtain the first two conditions round any piece of open water, but the last condition limits its distribution to special waters with a neutral or alkaline reaction, and as these are not too common, it is rather a local plant, though known from such widely separated localities as Wicken Fen, Hell Kettles (Durham), Cunswick Tarn (Westmorland), and Shirley Pool. The mud in which it was rooted was bluish-black and gave off considerable quantities of gas when disturbed, a sign of decay in conditions of insufficient oxygen supply. The zone of *Cladium* fringing the water was followed on the landward side by a zone in which *Cladium* was less abundant and the dominant plant was the Marsh Fern. The soil here was very wet, but was firm enough just to bear one's weight. Next came a few scattered bushes of Alder and Willow, between and landward of which was a reed-swamp with *Phragmites* dominant and almost pure. For some distance further the trees were rather sparse and the open spaces between were occupied by *Phragmites* as the general dominant, with Woody Nightshade and *Calamagrostis lanceolata* locally dominant. It was very characteristic of certain portions of the *Phragmites* swamp to have the Greater Bindweed abundant, twining round the stems of the *Phragmites*. A zone of *Phragmites* or *Epilobium hirsutum* supporting the greater Bindweed is, it may be mentioned, a marked feature of Hornsea Mere, and there this zone is practically continuous round the greater part of the lake. At

Hornsea, too, are the sub-dominants or local co-dominants, Woody Nightshade and Calamagrostis. The transition from the Cladium reed-swamp at the water's margin to the Phragmites-Nightshade-Calamagrostis association in the open spaces among the trees was one not only from a wetter to a drier habitat, but was also marked by other changes: (1) an increase of acidity (observations gave the series Pool water pH 7.0; Soil under Marsh Fern pH 6.9; Phragmites with much Woody Nightshade pH 6.0; Phragmites with much Bindweed pH 5.6; all records approximate); (2) a change in colour from blackish mud to a brown soil; and (3) an increase in organic matter. All these changes indicate a quite different cycle of soil formation changes in the two habitats.

In the fens, as Pearsall has pointed out, rapid silting prevents tree growth (Alder-Willow) and leads to grasses (Calamagrostis and Phalaris). The open spaces in the Alder-Willow association may have had a similar cause here, though Phalaris was only noted in one or two small areas, Calamagrostis being much more abundant. At any rate, when the very gradual rise of soil level on this western side of the pool led to firmer and drier soil not subject to any deposition of sediment an oak-birch wood was established. Common shrubs on and near this firmer ground were Guelder Rose and Alder Buckthorn.

Subordinate plants were, in the marginal *Cladium Mariscus* zone, *Rumex Hydrolapathum* and *Typha latifolia*; in the Marsh Fern zone, Woody Nightshade and *Typha latifolia*; and in the more landward Phragmites zone, Greater Skullcap, Marsh Bedstraw, and Meadowsweet; Stinging Nettle was noticeably common here also. Purple Loosestrife, Yellow Flag, and Yellow Loosestrife were occasionally found.

On the eastern side of the pool a much steeper rise of the pool banks led to ordinary pasture by the transition Cladium, *Sparganium ramosum*, *Carex paludosa* and *Carex riparia* with occasional *Ranunculus lingua*, and *Juncus effusus*.

It remains to conjecture what factor it was that caused Phragmites to replace Cladium at the edges of the pool on the whole of its south side and in restricted places on its northern margin. If one took into account the prevailing winds, it seemed that the more exposed shores had Phragmites, the less exposed Cladium. Probably the exposure to wind prevented the accumulation of organic matter in sufficient quantity for the demands of Cladium, which appears to flourish in a soil of higher organic content than Phragmites. The open water of the pool was not rich in water plants, the only noticeable one being Water Starwort.

Mosses.—These plants were not plentiful, but on fallen logs and on some tree bases *Aulacomnium androgynum* was frequently seen. On one fallen log *Orthodontium gracile* was found, and this with the other associated mosses were sent to Mr. W. H. Burrell, who says that the *Orthodontium* is the variety *heterocarpum*, the others being *Webera nutans*, *Mnium hornum*, *Eurhynchium crassinervium*, *E. prælongum*, *Plagiothecium denticulatum*, and *Hypnum riparium*.

NEWS FROM THE MAGAZINES

The Entomologist for August contains 'Notes on the Life History of *Aplasta ononaria* Fuess,' by E. A. Cockayne; 'A Broadland Calamity,' by C. O. Hammond (sea-water floods of Hickling Broad and Horsey Mere destroying localities for dragonflies *Aeshna isosceles*, *Orthetrum cancellatum*, etc.); 'Migration Records, 1938,' by Capt. T. Dannreuther; 'British Lepidoptera Collecting, 1937,' by C. G. M. de Worms; 'On the Types of *Adelpha* (Lep. Nymphalidæ) in the collection of the British Museum,' by A. Hall, and several notes and observations.

COLLECTING APPARATUS.

Nets	Vascula	Aquaria
Entomological Apparatus	Plant-Presses, etc.	Geologist's Apparatus
Larva-Cages	Pond-Nets	Dissecting Instruments
Vivaria	Collecting Tubes	Microscopes, etc.

All requisities for indoor or outdoor work in every branch of
Natural History.

FLATTERS & GARNETT, LTD., 309 OXFORD ROAD, MANCHESTER.

The Entomologist's Monthly Magazine

PRICE TWO SHILLINGS MONTHLY.

EDITED BY

K. G. BLAIR, B.Sc., F.R.E.S.	R. W. LLOYD, F.R.E.S.
H. G. CHAMPION, M.A., F.R.E.S.	F. LAING, M.A., B.Sc., F.R.E.S.
J. E. COLLIN, F.R.E.S.	H. SCOTT, M.A., Sc.D., F.L.S.
J. J. WALKER, M.A., R.N., F.L.S.	

This Magazine, commenced in 1864, contains Standard Articles and Notes on all subjects connected with Entomology, and especially on the Insects of the British Isles.

Subscription—15/- per annum, post free, to—
**NATHANIEL LLOYD & CO., LTD., BURRELL STREET,
LONDON, S.E.1.**

WATKINS & DONCASTER

NATURALISTS,

36, STRAND, LONDON, W.C.2

(Five doors from Charing Cross),

P.O. Box 126.

Telephone: Temple Bar 9451.

Keep in stock every description of

APPARATUS, CABINETS, BOOKS & SPECIMENS

for Collectors of

BIRDS' EGGS, BUTTERFLIES, MOTHS, Etc.

Catalogue (96 pages) sent post free on application.

REVUE DE GÉOLOGIE

et des Sciences Connexes.

|| Review of Geology and
the connected Sciences. ||

Rundschau für Geologie
und verwandte Wissenschaften

|| Rassegna di Geologia
e delle Scienze affini. ||

Sponsored by the SOCIÉTÉ GÉOLOGIQUE DE BELGIQUE, with the coöperation of the
FONDATION UNIVERSITAIRE DE BELGIQUE.

A monthly publication giving abstracts, clear but concise and not controversial, of original papers appearing in many widely distributed publications. Abstracts prepared by well-trained collaborators. Essential to the student reader and the investigator, enabling him to keep closely in touch with the progress and discoveries made over the whole world. Included are not only those in Geology proper, but also in the related sciences thus covering 18 Departments. In this work scientific institutions, geological surveys and many individuals coöperate, thus establishing close relations between the geologists of the whole world.

Secrétariat Général: Institut de Géologie, Université de Liège (Belgique).

Annual subscription price:

35 Belgas, sent to Mr. G. TIBBAUX, 35 rue des Armuriers, LIÈGE, BELGIUM,
also through a bookseller.



Reduced Reproduction of Plate IX.

AN
ENTIRELY
NEW
PUBLICATION

BY

H. A. LEA

National Association of Swimmers
Instructors.

WITH FOREWORD BY
FRED G. MILTON

Five Times English Champion

Crown 8vo,
120 pages, with 90 diagrams
plus 20 full-page plates
cloth boards

3/6 NET

SWIM LIKE A FISH

HOW TO BECOME AN ALL-ROUND SWIMMER

This book will prove a real boon to those countless thousands of people who are possessed of that inherent desire to "swim like a fish." Every branch of the great pastime, including the art of diving, is most carefully explained, step by step. The many explanatory diagrams, and the full-page photographic plates show what to do, and, in certain instances, what not to do. All who are prepared to put into practice the teachings contained in this book will achieve their ambition of becoming expert swimmers.

Obtainable through all Booksellers.



DIAGRAM 89—Tandem Front Crawl.

LONDON: A. BROWN & SONS, LTD., 5 Farringdon Avenue, E.C.4

Printed by A. BROWN & SONS, LTD., Perth Street West, Hull, and published by
A. BROWN & SONS, LTD., at 5 Farringdon Avenue, in the City of London.
September, 1938.

The NATURALIST

A MONTHLY
ILLUSTRATED JOURNAL
PRINCIPALLY FOR THE NORTH OF ENGLAND

Edited by

W. H. PEARSALL, D.Sc., F.L.S., and W. R. GRIST, B.Sc.,
The University, Leeds.

with the assistance as referees in special departments of

H. B. Booth, F.Z.S., M.B.O.U.

J. M. Brown, B.Sc., F.R.E.S.

W. H. Burrell, F.L.S.

Chris. A. Cheetham, F.R.E.S.

W. J. Fordham, M.R.C.S., L.R.C.P.,

D.P.H.

Riley Fortune, F.Z.S., F.R.P.S.

Professor A. Gilligan, D.Sc., F.G.S., M.I.M.E.

Mrs. Elsie M. Morehouse.

Thos. Sheppard, M.Sc., F.G.S., F.Z.S.

T. W. Woodhead, Ph.D., M.Sc., F.L.S.



Contents

PAGE

Two Rare Flint Daggers (illustrated) — T. Sheppard, M.Sc.	269-270
Mulitated Gulls on the Yorkshire Coast — W. J. Clarke	270
Austwick Moss Peat Pits (illustrated) — W. H. Burrell and Chris A. Cheetham	271-273
<i>Seligeria tristicha</i> B. & S. in Westmorland — T. H. B. Bedford	274
The Yorkshire Coast	275
Records	276
<i>Prionocera subserricornis</i> Ztt. and <i>Lasiodiamesa sphag-</i> <i>nicola</i> Kief. in Yorkshire and other Diptera Notes — Chris A. Cheetham	277-278
Reviews and Book Notices	278
News from the Magazines	275, 278
The Trichoptera or Caddis-Flies of Yorkshire — James M. Brown, B.Sc., F.R.E.S., and H. Whitehead, B.Sc.	279-285
Meeting of Yorkshire Entomologists at Askern — Maurice D. Barnes	286-288
Yorkshire Naturalists at Hedon	288-290
Yorkshire Naturalists at Sedbergh	290-292
The Vegetation of Yorkshire and Supplement to the Floras of the County — (the late) Dr. F. A. Lees — Edited by C. A. Cheetham	293-300
Illustrations	269, 271, 275

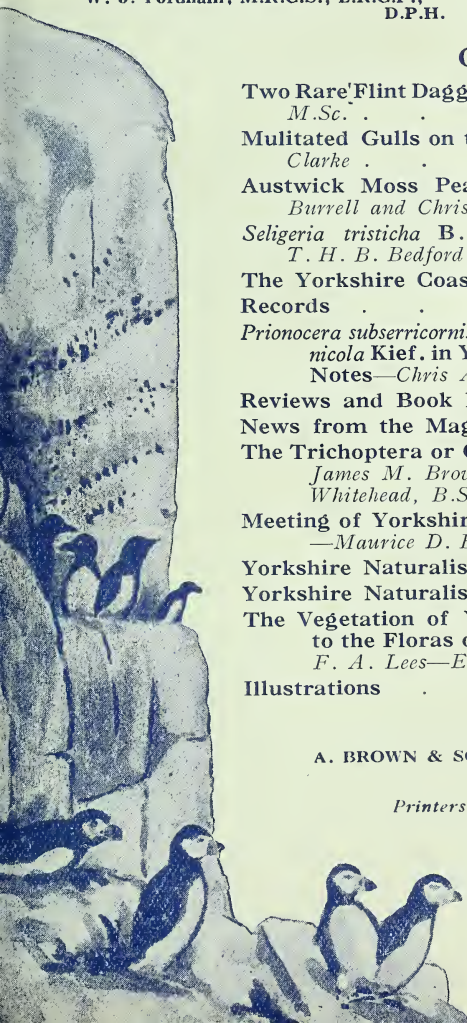
LONDON :

A. BROWN & SONS, Ltd., 5 Farringdon Avenue, E.C.4.
And at Hull.

Printers and Publishers to the Y.N.U.

PRICE 1/6 net.

Prepaid Subscription
15/- per annum.



YORKSHIRE NATURALISTS' UNION

BOTANICAL SECTION

THE Botanical Section will meet in the 'Common Room' on the first floor of the Botanical Department, Leeds University (now in Beech Grove Terrace), on Saturday, October 8th, at 3-30 p.m.

The Reports of the Section and its Committees will be considered and officers of the Section and its Committees will be nominated for election at the Annual Meeting of the Union at Hull in December. In the evening Professor Priestley and Miss Scott will give a demonstration and read a note on 'figure' in Sycamore wood. Other papers or exhibits will be welcome.

CHRIS. A. CHEETHAM,
Hon. Secretary.

VERTEBRATE SECTION

TWO MEETINGS will be held in the Library of the Church Institute, Albion Place, Leeds, on Saturday, October 15th, 1938, at 3-15 and 6-30 p.m.

At 3-15 p.m., to consider and pass (a) Sectional Reports for 1938 and to elect officers for 1939; (b) the General and Financial Reports of the Yorkshire Wild Birds and Eggs Protection Acts Committee for 1938, and to recommend this Committee for 1939; (c) the Reports of the Yorkshire Mammals, Amphibians, Reptiles, and Fishes Committee for 1938, and to recommend this Committee for 1939.

The following papers will be given:

'Yorkshire Sea Birds: A Survey,' by C. F. Procter.

'About the Adder (*V. berus*),' illustrated, by Ellen Gallwey.

'With Temminck's Stint in Scotland,' by G. R. Edwards.

Illustrated by Messrs. G. R. Edwards, V. S. Crapnell, and R. Chislett,
F.R.P.S., M.B.O.U.

Members and Associates are cordially invited to attend and to bring notes, specimens, and lantern slides. Will Officials of Affiliated Societies kindly notify their members?

11 The Avenue,
Clifton, York.

E. WILFRED TAYLOR,
Hon. Secretary.

ENTOMOLOGICAL SECTION

THE Annual Meeting of the Section will be held at Leeds, in the Church Institute, Albion Place, on Saturday, October 22nd.

At 3 p.m. the meeting will open with an exhibition of specimens at which members and visitors are asked to contribute. The evening session (commence 6 p.m.) will be devoted to Records' reports and elections.

M. D. BARNES, *Hon. Sec.*,
12 Dudley Road Marsh,
Huddersfield.

CONCHOLOGICAL SECTION

THE Annual Meeting of this Section will be held in the Geology Department of the University of Leeds, 5 Hillary Place, Woodhouse Lane, on Saturday, October 29th, at 3 p.m.

135 Park Road,
Elland.

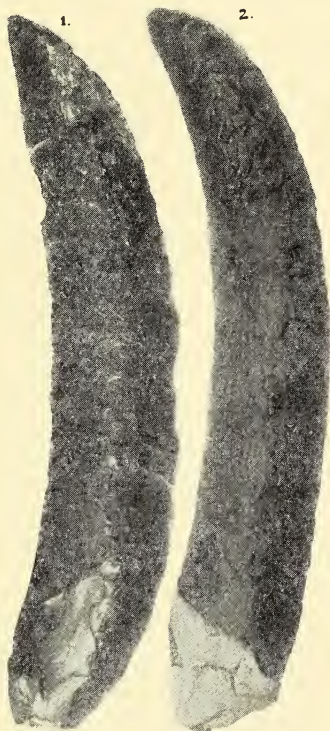
E. DEARING,
Hon. Secretary.

TWO RARE FLINT DAGGERS

T. SHEPPARD, M.Sc.

IN Sir John Evans' *Ancient Stone Implements* is illustrated a magnificent sickle-shaped flint dagger with the following description :

"Fig. 268 represents a beautifully formed dagger, with a curved blade tapering to a point, and found in draining at Fimber, Yorkshire. It is preserved in the collection of Messrs. Mortimer of Driffield, who have kindly allowed me to engrave



it. It is about 7 inches in length, formed of flint, which has now become ochreous in colour, and exhibits a portion of the natural crust at the butt-end. The blade is nearly equally convex on the two faces, but thickens out at the butt, which seems to have formed the handle, as the side edges which are elsewhere sharp are there slightly blunted. The faces present no signs of having been ground or polished." Actually this specimen was found at Kilnwick, Yorkshire, in 1867. At that time it was apparently the only one of this kind known.

Later, the present writer illustrated it in Mortimer's *Forty*

Years Researches, and also in the Catalogue of the Mortimer Museum at Driffild in 1900. It is now in the Mortimer Museum at Hull.

More recently an almost precisely similar implement has been found at Scunthorpe, and is one of the treasures in that Museum. The measurements of the Hull and Scunthorpe daggers are almost identical, namely :

Scunthorpe : $7\frac{7}{16}$ inches in length ; 1 inch wide near the pointed end, $1\frac{1}{4}$ inches wide in the centre, and $1\frac{1}{4}$ inches wide at the butt end. The thickness varies from $\frac{1}{8}$ inch at the point, $\frac{7}{16}$ inch in the middle, to $\frac{5}{8}$ inch at the butt end.

Hull : Length $6\frac{7}{8}$ inches, and exactly similar in every detail with the Scunthorpe example as regards width and thickness.

There is such a similarity in the two implements that it suggests that they are the work of the same individual. The illustration herewith shows (1) the flint dagger in the Mortimer Museum at Hull, and (2) the example found at Scunthorpe. The illustration is about half size.

MUTILATED GULLS ON THE YORKSHIRE COAST

W. J. CLARKE

TALKING to an angling friend, Mr. Bell, who often goes over to Filey Bay to fish from the shore for Cod, he asked me if I had seen any gulls about with only one wing. In response to my enquiries he told me that during July he had seen several living injured gulls, whose species he did not know, on the beach about Hunmanby Gap, each bird having one wing missing. He saw three on one occasion, which he killed 'to put them out of their misery.' Two more living birds were seen on a subsequent occasion and about six dead ones, all with one wing, missing. No other injury was apparent, and the wounds did not appear to be of recent origin.

This recalled to my mind that a short time before I had been told of a living seagull on the beach at Scarborough with only one wing but I did not think much of it at the time.

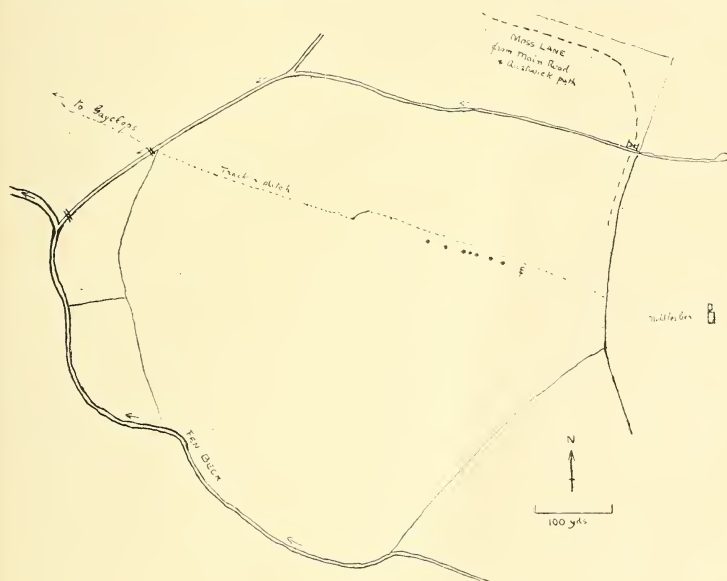
In search of further information on this mysterious happening, I wrote to Mr. T. Hyde-Parker of Reighton, to learn if he had seen anything similar. He had not been on the shore for some time and had not, consequently, seen anything of these injured birds. But he was told by Mr. P. T. Clay of Filey that when at Speeton the previous week (approximately the first week in July) he met a boy who mentioned that he had seen a gull (species again unspecified) with only one wing.

We are quite at a loss to account for the presence of so many mutilated birds on this part of the coast, and would welcome the observations of anyone who may have visited this district lately.

AUSTWICK MOSS PEAT PITS

W. H. BURRELL AND CHRIS. A. CHEETHAM

A QUESTION arose in 1916 as to the length of time required for the renewal of the peat in certain pits on Austwick Moss and also a reason was sought to show why some were dominated by *Hypnum* and others by *Sphagnum* and it was decided to mark a number for continuous observation. A reference to the sketch plan will enable these pits to be located, they



are on the line of an indistinct track from Middlesber Farm to Gayclops Farm. This track leaves the Middlesber Farm boundary about three-quarters of its length from the gate leading on to the Moss in the north-east corner. A pine tree some 150 paces from the hedge was used as a starting point and the pools may then be paced out as follows :

Pine tree to centre of No. 1	23	paces
Centre of No. 1 to centre No. 2—16	„	
„ „ 2 „ „ 3—22	„	
„ „ 3 „ „ 4—6	„	
„ „ 4 „ „ 5—5	„	
„ „ 5 „ „ 6—24	„	
„ „ 6 „ „ 7—23	„	

These pools vary in size and are about 4 feet deep, the uneven bottom suggesting that the peat had been completely removed down to an irregular drift surface; in one pit a hard bottom was touched at 2 feet in the north-east corner, the north-west corner being 4 feet deep. They were probably all of the same age; 5 had an average depth of water of about 18 inches with a floating vegetation of semi-aquatic mosses, hepatics, filamentous algæ with some marsh plants. In the driest periods the water has not disappeared, in the wettest it has been almost level with the adjoining footpath. Two pits differed; No. 1 was a deep, dark pool except for leaves of *Potamogeton polygonifolius* floating on the surface and No. 7 was selected for its more advanced state of recovery; it seemed to belong to the series, but owing possibly to better drainage to the adjoining ditch, water was permanent only at the east end and only covered the bottom in the wettest seasons.

Pit No. 1.— $3\frac{1}{2} \times 2$ paces, depth about 5 feet from ground level. In August, 1916, *Potamogeton* was dominant with a little *Sphagnum cuspidatum* and some Alga. In 1919 *Sparganium natans* appeared and these plants are still there and *Carex Goodenowii* has crept down the east end. A little *Hypnum fluitans* was noted in 1931. This is called the 'tadpole pool' by Pearsall on p. 247. It has kept a clear type of water and has an interesting fauna. It was here that *Corethra pallida* F. was first caught with *C. plumicornis* F. and their larvæ are usually plentiful. There are also water beetles and larvæ of the dragonflies, *Pyrrhosoma nymphula* and *Sympetrum scoticum* and both the Frog and the Toad spawn in this pool. The algæ vary with the date and season.

Pit No. 2.— 5×4 paces, depth $1\frac{1}{2}$ to 3 feet. In 1916, *Chiloscyphus polyanthus* was dominant on the floor of the pit with a little *Hypnum fluitans* and *Sphagnum cuspidatum* and some *Utricularia minor*. Little change was noted until 1930 when the *Hypnum* decreased and *Sphagnum* became dominant, *Comarum palustre* got in in 1931, now it is full of *Sphagnum* with *Comarum* well spread; the *Utricularia* has not been seen lately.

Pit No. 3.— 5×4 paces, depth 3 feet. The wall in the south-east corner is broken down giving communication with an adjoining Cottongrass-Sphagnum swamp. In 1916 *Hypnum* and *Sphagnum* were both abundant. *Eriophorum angustifolium* has steadily increased and so has the *Sphagnum* whilst the *Hypnum* has not been seen lately. In the south-west corner

Molinia, Heather, *Sphagnum cymbifolium*, and a small birch tree have got well established.

Pit No. 4.—4×4 paces. A lump of peat capped with Calluna and *Eriophorum vaginatum* formed a small island in the south-west corner, *Sphagnum* and *Eriophorum angustifolium* occupied about half the water surface, these now cover the whole surface.

Pit No. 5.—5×5 paces. *Sphagnum* and *Eriophorum* have been dominant throughout, alga has been abundant at times and a mass of *Molinia*, *Eriophorum*, *Calluna*, and *Erica* began to consolidate in the south-west corner in 1926.

Pit No. 6.—5×4 paces, depth 3 feet from ground level. In 1916 *Hypnum fluitans* smothered with algæ filled most of the surface with a little *Sphagnum*. By 1931 the *Sphagnum* equalled the *Hypnum* in quantity and the alga persisted. In 1937 a bullock during a day or two immersion churned the pit floor and water into a soft mass of peat; this is now partly covered with young plants of *Juncus bufonius* and it should be interesting to see its future development.

Pit No. 7.—3×5 paces, about 1½ feet deep with a firm floor except at the east end where a hole always showed water. The floor vegetation consisted of *Comarum*, *Scabiosa succisa*, *Calluna*, *Molinia*, *Eriophorum vaginatum*, *Sphagnum*, *Polytrichum*, and *Brachythecium rutabulum*, *Juncus effusus*, *Carduus palustris*, and *Carex ampullacea*. There is a small *Salix caprea* on the north-west margin.

The evidence of 22 years points to centuries being required wholly to obliterate these pits. Enquiries seem to suggest that peat digging was carried on up to 50 years ago and these pits may have been worked at that time. It is very unlikely to have been at a later date and may have been earlier.

The foregoing details may be useful at some future date when the matter can be reconsidered.

The difference of acidity shown in Pearsall's paper seems to point to the ultimate state being the high acidity of the *Sphagnum* pools but it is not clear if the acidity is the cause of the turnover to *Sphagnum* or if the *Sphagnum* is the reason for this high factor being found.

It will be noted that where any change has occurred *Hypnum* has given way to *Sphagnum* and now no *Hypnum* pool remains in this series. There are many other pools on the Moss with *Hypnum* dominant fortunately, for it is in these that the larvæ of *Phalacroceræ replicata* are found feeding on the *Hypnum*, and some of these might be definitely located and watched over a term of years.

SELIGERIA TRISTICHA B. & S. IN WESTMORLAND

T. H. B. BEDFORD

IN January 1938 *Seligeria tristicha* was discovered in a line of pot holes which lies on the east side of the valley of the Mallerstang, about a mile north of Hell Gill Bridge. No previous record for this moss in Westmorland has been traced. The discovery was reported in *The Naturalist*, March, 1938. It has now been encountered in the following additional stations.

1. The gorge of Hell Gill Beck, 1,300 ft. O.D. (January, 1938). Sheets of *S. tristicha* are growing on both the Westmorland and the Yorkshire sides of the gorge directly below Hell Gill Bridge. Specimens were obtained with fruit. Care should be exercised when investigating this station. It is comparatively easy to descend the gill at this point but very difficult to climb out again unaided. Escape both up and down stream is barred by deep pools. The use of a rope and the assistance of a companion is desirable.

2. Wild Boar Fell, 1,550 ft. O.D. (April, 1938). The moss is growing in the pot holes on the east slope of the fell. Many of these pot holes are of great depth and cannot be examined by ordinary means.

3. Nateby Common, 1,650 ft. O.D. (May, 1938). The pot holes in this region contain the moss. The growth, however, is somewhat scanty.

4. River Rawthey, near Needlehouse Gill, 800 ft. O.D. (March, 1938). The moss grows abundantly on both sides of the river where limestone exposures occur. It is comparatively easy of access. Plants with fruit were obtained in this station.

It will be noticed that all these stations lie on or within a few miles of the border between Westmorland and Yorkshire. In view of the prevalence of *S. tristicha* on the Yorkshire side, it is not surprising that it should be found in the adjacent portion of Westmorland, where, geologically, the conditions are very similar. The station on the Rawthey near Needlehouse Gill is, perhaps, an exception. The gills on the west slope of Baugh Fell which contain limestone have so far failed to reveal the moss. Similarly, the pot holes above Taythes Gill do not seem to contain it, although the habitat, in a number, would appear ideal. The Rawthey station is, therefore, somewhat isolated. It is, of course, conceivable that future investigation may reveal the moss to be more widely distributed in this region than this single record would indicate. The conditions which determine the growth of the limestone *Seligerias* are worthy of careful study.

I REMEMBER many years ago, hearing a well-known geologist, who was also a clergyman, complain very bitterly that he had left a charming parish near the chalk cliffs of Sussex to come to a parish in Holderness which he thought was very uninteresting.

Local geologists, however, think that the coast has its charms, and the delightful view of it at Holmpton, which



The Yorkshire Coast at Holmpton.

appeared in the September number of *Ours*, the house magazine of Messrs. Reckitt & Sons, is reproduced herewith, with their permission.

It illustrates very well the way in which a plan of the coast is like a saw, due in many cases to the fact that drain-pipes collecting water from the fields, trickle down the sides of the Boulder Clay, making soft patches which are eroded quicker than the intervening sections.

The photographer in this case is certainly an artist, and a print of it would be a great attraction in an exhibition of Yorkshire photographs.—T.S.

The Entomologist for September contains 'Microlepidoptera from Ireland,' by B. F. Beirne; 'Natural Habits of *Hydriomena* (*Perizoma*) *taeniata* Steph. (Lep. Geometridae),' by A. E. Wright; 'British Lepidoptera Collecting, 1937,' by C. G. M. de Worms; 'The Names of Some Mallophagen Genera,' by T. Clay; 'On the Types of *Adelpha* (Lep. Nymphalidae) in the Collection of the British Museum,' by A. Hall, and several shorter notes.

The Entomologists' Record for September contains 'Notes on breeding *Aporophyla australis* from the egg,' by C. Q. Parsons; 'Pyralidæ and Microlepidoptera collected in Cyprus during 1920 and 1921,' by K. J. Hayward; 'Contrexeville, Vosges, France,' by E. Scott; 'Collecting Notes and Current News, and Supplements; 'British Noctuæ and their varieties,' by H. J. Turner; and 'Butterfly races and Lygaenæ of Macedonia,' by R. Verity.

RECORDS

LAPWING WITH UNUSUAL COLORATION

IN May, 1937, I received a note from a friend of mine in Lancashire telling me that a 'white plover' had been frequenting a certain neighbourhood for several weeks. I communicated with Mr. H. B. Booth and the following week-end we went over to investigate. We spent several hours in pouring rain walking over the area where it had been seen, but had to come away without having seen the bird, and I am told that it was not noticed in that district again that year.

In March this year (1938) my friend wrote saying that the 'white plover' was again frequenting the same area as before, and on March 20th I went over. This time I saw the bird as soon as I arrived on its territory, and kept it under observation for the greater part of the afternoon. Most of its plumage was white, but there were one or two dark feathers round the eyes, in one wing, and in the tail and crest. From a distance it appeared to be all white. It did not appear to have a mate, although it seemed to have settled definitely on one area, driving off its neighbour, a lapwing of normal colour, whenever it trespassed.—W. F. FEARNLEY.

MYOSOTIS BREVIFOLIA C.E.S.

ON the occasion of the Y.N.U. excursion to Blubberhouses, July, 1937, a small water Forget-me-not was collected not far from Moggington Bridge. These specimens were later sent for identification to Mr. Wade of Cardiff who named them *Myosotis brevifolia* C.E.S. This plant has not previously been recorded from V.C. 64, though it is known in V.C.s. 65, 66, 69, 70, 72, and 104.

A very hurried visit was paid to the Washburn Valley in July this year (1938) when the *Myosotis* was found in another bog much nearer Blubberhouses, where it was growing with *Ranunculus Lenormandi* F. Schultz.—C. M. ROB.

PROBABLE BREEDING OF THE CROSSBILL NEAR HARROGATE

ON Saturday, August 6th, I was in a pine wood quite close to Harrogate. Attracted by strange notes, I was surprised to see high up in the trees, a little party of five Crossbills, evidently a family party of two adults, and three young birds. Naturally, the only conclusion I could arrive at was that they had nested successfully in the wood. It is not wise, I think, to give the exact locality, but I shall look forward to keeping a sharp look-out during the next season, when I hope to be able definitely to record their nesting.—R. FORTUNE.

PRIONOCERA SUBSERRICORNIS ZTT. AND LASIODIAMESA SPHAGNICOLA KIEF. IN YORKSHIRE AND OTHER DIPTERA NOTES.

CHRIS. A. CHEETHAM

THE genus *Prionocera* Lw. is a small group of Tipulids which are split off from *Tipula* L. by the type of antenna they possess. These have no hairs and are somewhat serrate. The common species *P. turcica* Fab., long known as *Tipula diana* Mg., is fairly common in marshy areas and I recently saw the ♀♀s ovipositing in floating sphagnum, etc., in the bog pools on Austwick Moss; on May 11th while watching this process I noticed a smaller and darker insect which on examination proved to be a second species, *P. subserricornis* Ztt. (*pubescens* Lw.). This has only been known previously as British by two specimens found in collections now in the British Museum of Natural History. This species was restricted to a very wet area of the Moss; it was present in fair quantity throughout June and a series has been deposited in the British collection at South Kensington.

The following notes deal mostly with diptera from Austwick Moss this year. On March 25th I saw *Chortophila muscaria* Mg. and *C. intersecta* Mg. in plenty. The cotton grass *Tipula T. subnodicornis* Ztt. (*plumbea* auct.) and *Phalacroceras replicata* L. were first seen on April 14th, while *Pacilostola punctata* Schrk. was plentiful on April 17th. *Syrphus arcticus* Ztt. occurred frequently from April 24th onwards, and on April 27th *Bibio reticulatus* Lw. was plentiful. On May 1st I noted *Chilosia pubera* Ztt. and *Acroptena caudata* Ztt., and on May 5th *Tephritis leontodontis* Deg., *Cordylura pudica* Mg., and *Calomyia spathulata* Ztt. (*mollissima* Hal.). The first *Prionocera turcica* Fab. was caught on May 7th with *Dolichopus planitarsis* Fln. and *Boletina dubia* Staeg., then on May 11th I got *Prionocera subserricornis* Ztt., *Myopa buccata* L., *Sciomyza schanhherri* Fln., *Sepsis punctum* F., *Limnophila squalens* Ztt., and *Idioptera fasciata* L. The latter a species I have only seen very sparingly previously, but which has been present throughout June. I noticed *Tipula vittata* Mg. ovipositing on wet ditch sides and in the bottom of drying-up pools. On May 14th at the Ramsgill meeting I saw the large black *Chironomus anthracinus* Ztt. in numbers on the side of the reservoir.

On May 23rd, Dr. F. W. Edwards paid a visit to Austwick Moss and he was delighted to catch specimens of a midge belonging to a genus new to Britain, *Lasiodiamesa sphagnicola* Kief. In the *Internat. Revue Hydrobiologie und Hydrographie* 35 (65-112), 1937. Thienemann described the larva of this species and Dr. Edwards reviewed the European *Podonominae*

(adult stage). He says they differ from all *Chironomidae* in the absence of the vein R 2+3 though R 1 and R 4+5 are well separated, the wings in a position of rest are completely superposed over the back instead of being divaricate or occupying a roof-like position with their posterior margins touching. Of the three European genera a single species of *Podonomus* has been found in Britain in the North of Scotland. The *Lasiodiamesa* found at Austwick was previously known from Esthonia, from the Kola Peninsula and from Abisko, Swedish Lapland. In the paper cited, Dr. Edwards gives a description of the insect with diagrams of the wing, hypopygium and fifth tarsal segment.

REVIEWS AND BOOK NOTICES

In Search of the Gyr-falcon by **Ernest Lewis**, pp. xxiv + 236, with a memoir of the author, and illustrated by 24 photographs and maps. Constable, 12/6. The author of this book, whose real name was Ernest Vesey, died in 1937 when only 29 years old. He had already made a reputation for his writings on natural history and sporting subjects. This, his last work, gives an account of his expedition to North-west Iceland to look for Gyr-falcon eyries. His journey was entirely successful and he returned to Islay with six nestlings in first-rate condition. But the book deals with much more than this quest. It is full of valuable observations on the birds of Iceland, and it is well illustrated by the author's own photographs.

Fact and Fancy, by **Gertrude E. Beetham**, pp. 160, with 9 full-page photo illustrations. John Wright & Sons, 2/6. This is a pleasant introduction to bird-watching written in a style to suit quite young children. The few birds dealt with are not all very common but the author writes pleasingly and the text is helped out by excellent bird pictures.

The Cradle of the North Wind, by **A. S. T. Godfrey**, pp. xii + 234, with portrait of the author and end-paper maps. Methuen, 8/6. This is a well-written and most readable account of the author's adventures while a member of the Oxford University Arctic Expedition of 1935-36. Mr. Godfrey made several arduous journeys and for two months he had only one companion. Bird-life in Arctic regions can only be studied in the very short summer period and Mr. Godfrey made very good use of this time. His book is well worth reading for this alone. Healthy young men in search of strenuous adventure will read Mr. Godfrey's stirring tale with interest and no little envy.

NEWS FROM THE MAGAZINES

The Entomologist's Monthly Magazine for September contains 'Corrections and Additions to James Edwards' Catalogue of British Hemiptera-Homoptera, Perth, 1908 (excluding Psyllidae),' by W. E. China; 'Notes on the Insect Fauna of the Bromeliad, *Brocchinia micrantha* (Baker) Mez. of British Guiana,' by J. Smart; 'A Plague of the Beetle *Harpalus rufipes* Degeer,' by R. J. Whitney; '*Neophilaenus longiceps* Put. An Addition to the British List of Hemiptera-Homoptera,' by B. S. Williams (Benfleet sweeping on the saltings in July); 'The Mallophaga (Biting Lice) recorded from the Pacific Islands,' by G. B. Thompson; 'A Preliminary List of the Coleoptera of Windsor Forest,' by H. Donisthorpe and several shorter notes.

THE TRICHOPTERA OR CADDIS-FLIES OF YORKSHIRE

JAMES M. BROWN, B.Sc., F.R.E.S., AND H. WHITEHEAD, B.Sc.

(Continued from page 265)

Anabolia nervosa Curt.

- V.C. 61. Driffield, 28/9/30, 12/10/30, 26/10/30 (H.W.).
 V.C. 62. Castle Howard (G.T.P. Coll., 15/9/92). Pickering (G.T.P.), Scarborough (G.T.P., *The Naturalist*, 1897). Beck Hole, 17/9/36, Arncliffe Woods, 17/9/36, Mulgrave Woods, 12/9/36, Runswick Bay, 29/9/36 (J.M.B.).
 V.C. 63. Crosland Hall, Huddersfield (G.T.P. Coll., 8-9/85). Bradford (G.T.P., *The Naturalist*, 1897). Keighley, 21/9/34, 5/10/34, 6/10/33, 29/9/33 (J.W.).
 V.C. 64. Scarthingwell Lake, Saxton, 12/8/24 (H.W.). Hebden, 20/9/31 (W.G.B.). Harewood, 18/9/26 (H.W.). Meanwood Beck, Leeds, 1/10/24 (H.W.). Clapham, 5/9/08 (G.T.P.).

Phacopteryx brevipennis Curt.

- V.C. 62. Scarborough (R. McL., G.T.P. in *Vict. Hist.*).
 V.C. 64. "Probably Askham Bog, Given me by G. C. Dennis, Jan., 1890" (Label on specimen in G.T.P. Coll.).

Asynarchus coenosus Curt.

- V.C. 62. Nr. Middlesbrough (G.T.P. Coll., -/06, T.A.L.).
 V.C. 63. Huddersfield, Marsden Moor (G.T.P. Coll., 5-10/9/89), Bath St. Garden (G.T.P. Coll., 12/9/91), Royd Edge (G.T.P. Coll., 30/8/24), Dunford Bridge (G.T.P. Coll., 9/9/91, 9/98), Thorne Moor (G.T.P. Coll., 11/9/90, 16/7/90, J.H., 20/9/02). Strines, nr. Sheffield (G.T.P. Coll., 4/7/10). Meltham (G.T.P., *The Naturalist*, 1925, p. 61).

Stenophylax alpestris Kol.

- V.C. 63. Huddersfield, Dunford Bridge (G.T.P. Coll., -/91, J.H., 9/7/92, G.T.P., 9/7/92, W.M., 6/95, J.H.). Strines Wood, nr. Sheffield (G.T.P. Coll., 4/7/08, 30/6/09) (*E.M.M.*, 1908, p. 185, 1909, p. 215, 1915, p. 147).

S. infumatus McL.

- V.C. 62. Castle Howard (G.T.P. Coll., 13/6/96, G.C.D.).

S. rotundipennis Br.

- V.C. 62. Scarborough, 8/66, R.Mc. (G.T.P., *Vict. Hist.*). Castle Howard (G.T.P. Coll., 8/9/96).

S. stellatus Curt.

- V.C. 62. Castle Howard (G.T.P. Coll., 2/7/82, 8/9/96). Pickering (G.T.P. Coll., 12/9/96). Kildale (G.T.P. Coll., 10/03, T.A.L.). Helmsley, 3/9/35 (J.M.B.).
 V.C. 63. Huddersfield, Crosland Hall (G.T.P. Coll., -/97). Marsden (G.T.P. Coll., 9/91), Dunford Bridge (G.T.P. Coll., 7/7/08), Harden Clough (G.T.P. Coll., 9/9/11), Penny-spring Wood (G.T.P. Coll., 7/8/20), Meltham Mill (G.T.P. Coll., 4/7/00), Harden Moss Moor (G.T.P. Coll., 8/98). Keighley, 20/6/33, 7/7/35 (J.W.).
 V.C. 64. Grassington (G.T.P. Coll., 13/6/91). Burnsall, 6-7/31, Drebley, 22/9/31 (W.G.B.). Nr. Ilkley, 8/24 (H.W.). Bell Busk, 28/7/25 (E.P.). Grassington, -/8/32 (J.M.B.). Boston Spa (F.G.B.), (*The Naturalist*, -/97).

S. latipennis Curt.

- V.C. 62. Saltburn (G.T.P. Coll., 11-25/8/86). Robin Hood's Bay, 24/9/36, 12/10/37, 30/9/37 (J.M.B.).
- V.C. 63. Huddersfield, Crosland Hall (G.T.P. Coll., 8/9/94), Dunford Bridge (G.T.P. Coll., -/97, B.M.). Skelmanthorpe and Denby Dale (G.T.P. Coll., 9/9/05). Shipley Glen, 1/8/35, Keighley, 6/9/36, 26/9/36, 18/5/32 (J.W.). Ecclesall Wood, Sheffield, 9/10/34 (J.M.B.).
- V.C. 64. Malham, 3/7/32, 7/35 (J.M.B.).

Stenophylax vibex Curt.

- V.C. 62. Scarborough (G.T.P., *Vict. Hist.*). Beck Hole, 1/6/36, Whitby, 3/6/36 (H.B.). Helmsley, 3/9/35 (J.M.B.).
- V.C. 63. Huddersfield, Skelmanthorpe (G.T.P. Coll., 11/9/6, 5/9/6, 5/01, B.M.), Shipley Mill (G.T.P. Coll.), Dalton (G.T.P. Coll., 18/5/23). Thorne Moor (G.T.P. *Vict. Hist.*).

S. permistus McL.

- V.C. 61. Beverley (G.T.P., *Vict. Hist.*). Bubwith, 5/18, Allertorpe (W.J.F.).
- V.C. 62. Hayburn Wyke (G.T.P. Coll., 2-16/9/96). Helwath Beck, 27/9/37, Goathland, 30/9/37 (H.B.).
- V.C. 63. Edlington Wood, Doncaster (G.T.P. Coll., 17/9/91. Huddersfield, Pennyspring Wood (G.T.P. Coll., 3/6/89), Dalton (G.T.P. Coll., 23/5/20), Crosland Hall (G.T.P. Coll., 6/97), Meltham Moor (G.T.P. Coll., 27/5/85), Skelmanthorpe (G.T.P. Coll., 9/91, -/07, B.M.)- Ecclesall Wood, Sheffield, 5/5/37 (J.M.B.).
- V.C. 64. Malham (G.T.P. Coll., 13/9/90). Bishop's Wood, Selby (G.T.P. Coll., 25/5/96).

Micropterna sequax McL.

- V.C. 61. Beverley (G.T.P. Coll., 9/93, W.H.). Skipwith (G.T.P. Coll., -/98, C.D.A.).
- V.C. 62. York (G.T.P., *The Naturalist*, 1897). Saltburn (G.T.P. Coll., 11-25/8/86). Castle Howard (G.T.P., *The Naturalist*, 1897). Ravenscar, 9/10/37 (J.M.B.).
- V.C. 63. Huddersfield (G.T.P. Coll., G.B.), Pennyspring Wood (26/6/-, 17/8/20), Stacks Moor (G.T.P. Coll., -/95), Harden Moss Moor (G.T.P. Coll., -/98), Dalton (G.T.P. Coll., 10/7/23), Crosland Hall (G.T.P. Coll., -/98). Keighley, 27/9/31 (J.W.). Ecclesall Wood, Sheffield, 4/9/36, 12/7/37 (J.M.B.).
- V.C. 64. Newton Kyme (F.G.B.). Burnsall, 5/8/29 (W.G.B.). Hebden Beck, 6/7/27 (E.P.). Austwick, 31/5/37 (H.W.).
- V.C. 65. Marske (G.T.P.).

M. lateralis Steph.

- V.C. 61. Bubwith, 5/16 (W.J.F.).
- V.C. 62. Castle Howard (G.T.P. Coll., 12-17/6/96).
- V.C. 63. Huddersfield, Meltham Moor (G.T.P. Coll., 19/6/95), Crosland Hall (G.T.P. Coll., -/97), Skelmanthorpe (G.T.P. Coll., 5/97, B.M.). Ecclesall Wood, Sheffield, 4/7/36 (J.M.B.).

Halesus radiatus Curt.

- V.C. 61. Bubwith, 12/10/14 (W.J.F.). Driffield, 12/10/30 (H.W.).
- V.C. 62. Castle Howard (G.T.P. Coll., 8/9/96). York (G.T.P., *The Naturalist*, 1897), 15/9/92.

- V.C. 63. Leeds, G.T.P., *The Naturalist*, 1897). Huddersfield, Crosland Hall (G.T.P. Coll., 21/9/96). Ecclesall Wood, Sheffield, 25/9/35 (J.M.B.). Keighley, 29/9/35 (J.W.). Wakefield, 6/10 (G.T.P.).
- Halesus digitatus* Schr.
V.C. 62. Castle Howard (G.T.P., *Vict. Hist.*).
V.C. 63. Huddersfield, Dalton (G.T.P. Coll., 8/10/85), Skelmanthorpe (G.T.P. Coll., -/06, B.M.). Keighley, 10/9/34, 15/10/35, 3/9/36 (J.W.).
V.C. 64. Bishop's Wood, Selby (G.T.P. Coll., -/89, G.C.D.). Grassington, 16/9/24 (E.P.). Beckermunds, 19/9/24 (H.W.).
- H. auricollis* Pict.
V.C. 64. Malham Cove (G.T.P. Coll., 11/9/90). Grassington (G.T.P. Coll., 10/9/04), -/9/33 (J.M.B.). Collingham, 9/6/25 (E.P.). Ilkley, 23/9/26 (H.W.). Hebden, 20/9/31, 16/9/30 (W.G.B.). Hanlith, 6/9/33. Buckden, 12/6/32 (J.M.B.).
- H. guttapennis* McL.
V.C. 61. Pocklington (W. Hewett, Oct., G.T.P. in *E.M.M.*, 1908, p. 91). Driffeld, 26/10/30 (H.W.).
V.C. 62. Pickering (G.T.P. Coll., 9/11/95, G.C.D., 28/10/96, G.T.P.) (*E.M.M.*, 1896, p. 41).
V.C. 64. R. Wharfe, Burnsall, 15/10/29 (W.G.B.).
- Drusus annulatus* Steph.
V.C. 62. Hayburn Wyke (G.T.P., *The Naturalist*, 1897). Hole of Horcum, 31/8/37 (H.B.). Robin Hood's Bay, 7/9/36, 1/10/37, Ramsdale, 29/9/37, Mulgrave Woods, 12/9/36, Runswick Bay, 18/9/36 (J.M.B.).
V.C. 63. Wharnccliffe Woods, 3/9/03 (G.T.P.). Huddersfield, Pennyspring Wood (G.T.P. Coll., 3/6/89). Skelmanthorpe (G.T.P. Coll., -/01, B.M.), Denby Dale (G.T.P. Coll., 9/97, B.M.), Harden Moss Moor, (G.T.P. Coll. 17/8/98), Harden Clough (G.T.P. Coll., 25/6/01), Royd Edge, Meltham (G.T.P. Coll., 4/7/23). Gunthwaite, Penistone (G.T.P. Coll., 9/98, B.M.). Cudworth, 9/9/05 (G.T.P.). Renishaw, Sheffield, -/35 (J.M.B.).
V.C. 64. Ilkley, 8/24 (H.W.). Hebden, 20/9/31 (W.G.B.). Grassington (G.T.P. Coll., 12-16/6/00), 16/6/29 (W.G.B.), 8/9/33, 26/5/32 (J.M.B.). Malham, 8/7/32, 7/9/33, Ripon, 8/33 (J.M.B.).
- Ecclisopteryx guttulata* Pict.
V.C. 62. Wykeham, Scarborough (G.T.P., *Vict. Hist.*), 25/6/01 (G.T.P.). Glaisdale, 4/6/09 (G.T.P.).
V.C. 63. Dunford Bridge (G.T.P. Coll., 3/6/92). Hebden Bridge, 11/6/04 (G.T.P.). Keighley, Shipley Glen, 1/6/31, (J.W.).
V.C. 64. Grassington (G.T.P. Coll., 12-16/6/00), 30/8/34 (J.M.B.). Collingham, 9/6/25 (E.P.). Hebden Beck, 6/6/27, Bell Busk, 12/6/25, Ellerbeck, Skipton, 10/6/26 (E.P.). Meanwood Beck, Leeds, 19/6/26 (H.W.), 4/6/31 (W.D.H.). The Pant, Austwick, 7/27 (H.W.).
V.C. 65. Between Redmire and Aysgarth (G.T.P. *Vict. Hist.*). Dent, 6/6/33, Hawes, 2/6/36 (J.M.B.).
- Chaetopteryx villosa* Steph.
V.C. 61. Driffeld, 12/10/30, 26/10/30 (H.W.).
V.C. 62. Castle Howard, Middlesbrough (G.T.P., *Vict. Hist.*). Pickering (G.T.P. Coll., 28/10/96). Whitby, 1/10/37 (H.B.).

- V.C. 63. Huddersfield, Crosland Hall (G.T.P. Coll., 21/9/86, 12/10/94, 11/94). Keighley, 7/10/34, 19/11/35 (J.W.). Sheffield, Ecclesall Wood, 13/10/34, Wyming Brook, 22/9/37 (J.M.B.).
- V.C. 64. Burnsall, 16/6/29 (W.G.B.).

Apatania muliebris McL.

- V.C. 65. R. Swale, between Keld and Hind Hole Beck, 15/5/37 (H.W.). (This interesting capture was confirmed by M.E.M.).

Family—SERICOSTOMATIDAE

Sericostoma personatum Spence.

- V.C. 61. Driffield, 31/8/30, 28/9/30 (H.W.), 8/29 (J.M.B.).
- V.C. 62. Castle Howard (G.T.P. Coll., 13-27/6/96). Fen Bog, Goathland, 11/7/37 (H.B.). Robin Hood's Bay, 23/6/36. Whitby, 24/6/36 (J.M.B.).
- V.C. 64. Collingham, 9/6/26, Above Ripley, 16/6/25 (E.P.). Hebden Ghyll, 24/7/29 (W.G.B.). Fen Beck, Austwick, 26/6/25 (H.W.). Skipton, 8/33, Malham, 2/7/32, 3/7/35 (J.M.B.).

Goëra pilosa Fabr.

- V.C. 62. York (G.T.P. Coll., 1890, G.C.D.). Castle Howard (G.T.P. Coll., 13/6/96).
- V.C. 63. Huddersfield, Greenfield (G.T.P. Coll., 1889, G.L.M.).
- V.C. 64. Gargrave, 6/6/25 (E.P.). Collingham, 9/6/25 (E.P.). Boston Spa and Tadcaster (F.G.B., 1880). Ripley, 5/7/25 (E.P.). Skipton, 8/32 (J.M.B.). Poole, 8/6/31 (W.D.H.).

Silo pallipes Fabr.

- V.C. 61. N. Grimston (G.T.P. Coll., 14/6/02). Filey (G.T.P. Coll., 6/14). Driffield, 10/8/30 (H.W.).
- V.C. 62. Castle Howard (G.T.P. Coll., 1890, G.C.D.). Kildale (G.T.P. Coll., 2/8/13). Hole of Horcum, 26/7/37, 31/8/37 (H.B.). Hovingham, 5/8/35, Robin Hood's Bay, 14/6/37, 25/6/37 (J.M.B.).
- V.C. 63. Huddersfield, Meltham Mills Reservoir (G.T.P. Coll., 12/9/96, 4/7/00), Pennyspring Wood (G.T.P. Coll., 1888). Hebden Bridge (G.T.P. Coll., 11/6/04). Shipley Glen, G.T.P. (*The Naturalist*, 1897). Keighley, 9/6/33, 9/6/35 (J.W.).
- V.C. 64. Askham Bog (G.T.P. Coll., R. McL.). Ingleton (G.T.P. Coll., 7/8/11). Gisburn, 23/7/32 (W.G.B.). Eller Beck, Skipton, 10/6/26 (E.P.). Austwick Beck, 6/25, Clapdale Beck, Clapham Cave, 22/6/25 (H.W.). Malham, 25/7/35 (J.M.B.).
- V.C. 65. Dent, 6/6/33 (J.M.B.).

S. nigricornis Pict.

- V.C. 64. Malham, 2/7/35 (J.M.B.).

Brachycentrus subnubilus Curt.

- V.C. 62. Clifton, York (G.T.P. Coll., 7/97, G.C.D.). Lealholm (G.T.P. Coll., 5/6/09).
- V.C. 64. Burnsall, 28/6/29 (W.G.B.). Grassington, 7/34 (J.M.B.).

Crunæcia irrorata Curt.

- V.C. 62. Robin Hood's Bay, 10/9/36 (J.M.B.).
- V.C. 63. Wharnccliffe Woods, Sheffield (G.T.P. Coll., 22/8/02). Huddersfield (G.T.P., *Vict. Hist.*). Keighley, 6/8/34 (J.W.).
- V.C. 64. The Hollies, nr. Leeds, 13/9/24 (H.W.). Gisburn, 9/9/30 (W.G.B.).

Lepidostoma hirtum Fab.

- V.C. 62. Hovingham, 5/8/35, Helmsley, 3/9/35 (J.M.B.).
 V.C. 64. Tadcaster, 1880 (F.G.B.). Hebden Beck, 11/8/31, Gisburn,
 8/8/31, 28/7/33 (W.G.B.). Bell Busk, 27/7/25 (E.P.).
 Grassington, 31/9/34 (J.M.B.).
 V.C. 65. Masham (G.T.P. Coll., 3/8/01).

Lasiocephala basalis Kol.

- V.C. 62. Glaisdale (G.T.P. Coll., 4-10/6/09). Castle Howard
 (G.T.P., *Vict. Hist.*). Helmsley, 3/9/35 (J.M.B.).
 V.C. 64. Grassington (G.T.P. Coll., 11-16/6/00). Buckden, 8/04
 (G.T.P.). Ripley, 16/6/25 (E.P.). Grassington,
 31/8/34 (J.M.B.).
 V.C. 65. Dent, 6/6/33 (J.M.B.).

Family—ODONTOCERIDAE

Odontocerum albicorne Scop.

- V.C. 62. Hole of Horcum, 26/7/37 (H.B.). Mulgrave Woods,
 12/9/36 (J.M.B.).
 V.C. 63. Harden Clough, Kelbrook, 27/7/29 (W.G.B.). Keighley,
 8/34, Silsden, 8/8/34 (J.W.).
 V.C. 64. Grassington (G.T.P. Coll., 12-16/6/00). Austwick, 6/26,
 11/7/27 (H.W.). Malham, 2/7/35, Goredale, 7/35,
 Ripon, 8/33 (J.M.B.).

Family—LEPTOCERIDAE

Leptocerus nigronervosus Retz.

- V.C. 61. Bubwith, 23/5/18 (W.J.F.).
 V.C. 62. Castle Howard (G.T.P. Coll., 12/6/96, 10/6/97). Glaisdale
 (G.T.P. Coll., 4-10/6/09. York (G.T.P. Coll., 6/90,
 G.C.D.).
 V.C. 64. Grassington (G.T.P. *Vict. Hist.*). Burnsall, 6/7/31
 (W.G.B.). Poole, 15/6/27 (E.P.). Hebden, 9/6/31
 (W.G.B.).

L. annulicornis Steph.

- V.C. 62. York (G.T.P. *Vict. Hist.*). Castle Howard (G.T.P. Coll.,
 20/6/95).
 V.C. 64. Grassington (G.T.P. Coll., 12-16/6/00). Ilkley, 22/8/24,
 Collingham, 9/6/25, Ripley, 16/6/25 (E.P.). Burnsall,
 6-7/31, Gisburn, 11/6/32 (W.G.B.).

L. aterrimus Steph.

- V.C. 61. York, 10/6/33 (J.R.D.). Kilnwick Percy, 3/8/36 (J.M.B.).
 V.C. 62. Hovingham, 5/8/35 (J.M.B.).
 V.C. 63. Bradford (G.T.P.) (*The Naturalist*, 1897). Huddersfield,
 Meltham Mills Res. (G.T.P. Coll., /96), Crosland Hall,
 -/98-99 (G.T.P.), Kirkheaton (G.T.P. Coll., 24/6/89),
 Dogley and Fendy Bridge (G.T.P. Coll., 14/6/99).
 Keighley, 18/7/31 (J.W.).
 V.C. 64. Burnsall, 6-7/31 (W.G.B.). Gargrave, 8/32 (J.M.B.).
 V.C. 65. Tanfield, 15/6/12 (G.T.P.).

L. cinereus Curt.

- V.C. 62. York (G.T.P. Coll., -/90, G.C.D.). Castle Howard
 (G.T.P. Coll., 27/6/96). Scarborough (G.T.P. *Vict.*
Hist.).
 V.C. 63. Huddersfield (G.T.P. *Vict. Hist.*). Keighley, 7/7/34
 (J.W.).
 V.C. 64. Harewood Br., 18/7/25, Ripley, 19/7/25 (E.P.). Colling-
 ham, 10/8/30 (H.W.). Burnsall, 6-7/31 (W.G.B.).
 Tadcaster, -/80 (F.G.B.). Malham, 25/7/35 (J.M.B.).

- V.C. 65. R. Tees, Eryholme, 15/7/30 (H.W.). Masham (G.T.P. Coll., 5/8/91). Semerdale, 9/35 (J.M.B.).
- L. albifrons* L.
V.C. 62. Scarborough (G.T.P. Coll., -/93). Hovingham, 5/8/35 (J.M.B.).
- V.C. 64. Ilkley, 8/24 (H.W.). Boston Spa, -/80, Tadcaster, -/80 (F.G.B.). Gisburn, 23/7/32, 28/7/33 (W.G.B.). Ripley, 1/8/25, Harewood Br., 18/7/25 (E.P.). Malham (J.M.B.).
- V.C. 65. Masham (G.T.P. Coll., 5/8/01).
- Leptocerus commutatus* McL.
V.C. 62. Scarborough, McL. (G.T.P. *Vict. Hist.*).
V.C. 64. Ripley, 5/8/25 (E.P.). Gisburn, 1/8/32, Hebden, 11/8/31 (W.G.B.). Conistone, 30/8/34 (J.M.B.).
- L. bilineatus* L.
V.C. 62. Castle Howard (G.T.P. Coll., 23-27/6/96). Kildale (G.T.P. Coll., 2-4/8/13). Nr. Middlesbrough (G.T.P. Coll., -/09, T.A.L.).
- V.C. 63. Keighley, 9/7/34, 10/6/35 (J.W.).
- V.C. 64. Buckden (G.T.P. Coll., 1/8/04). Ripley, 16/6/25 (E.P.). Burnsall, 6-7/31 (W.G.B.). Clapham, 30/8/20 (W.J.F.). Washburn, 18/7/31 (J.W.). Ripon, 8/33, Malham, 25/7/35 (J.M.B.).
- L. dissimilis* Steph.
V.C. 64. Gisburn, 28/7/33 (W.G.B.).
V.C. 65. Long Ghyll, Baugh Fell, 8/6/29 (H.W.). (Male conf. by K. J. Morton.)
- Mystacides nigra* L.
V.C. 62. Scalby Beck (G.T.P. Coll., 9-16/9/96, 1-3/8/03). Fen Bog, Goathland, 11/7/37 (H.B.).
- V.C. 63. Askern (G.T.P. Coll., 25/7/91). Thorne (G.T.P. Coll., 18/7/91). Keighley (J.W.).
- V.C. 64. Fen Beck, Austwick, 12/7/27 (H.W.). Stutton, -/80 (F.G.B.). Burnsall, 23/6/29 (W.G.B.). Poole Bridge, 20/7/27 (E.P.). Ilkley, 23/9/26, Collingham, 10/7/30 (H.W.). Hambleton, nr. Selby (G.T.P. Coll., 14/8/97). Gargrave, 9/33 (J.M.B.).
- M. azurea* L.
V.C. 62. Castle Howard (G.T.P. Coll., 13/6/96). York (G.T.P. Coll., 6/90, G.C.D.). Helmsley, 3/9/35, Ruswarp, 11/9/36 (J.M.B.).
- V.C. 63. Huddersfield, Meltham Mill Res. (G.T.P. Coll., 12/8/96, 7/00), Hagg Wood, Brockholes (G.T.P. Coll., 25/7/98), Grange Hall (G.T.P. Coll., 7/98, B.M.). Walton Hall Wood, Wakefield (G.T.P. Coll., 20/6/20). Keighley, 15/6/34, 26/8/32 (J.W.). Wyming Brook, Sheffield, 25/8/37 (J.M.B.).
- V.C. 64. Boston Spa, -/80 (F.G.B.). Burnsall, 6-7/31 (W.G.B.). Fewston Res., 10/7/37 (H.W.). Tadcaster (G.T.P. Coll., 10/6/99). Bradford (G.T.P.). Grassington, 8/9/32, Hanlith, 6/9/33, Malham, 2/7/35 (J.M.B.). Washburn, 18/7/31 (J.W.).
- V.C. 65. Semerdale, 6/35, Bainbridge, 6/34 (J.M.B.).
- M. longicornis* L.
V.C. 61. Hornsea Mere (G.T.P. Coll., 8/6/09). Kilnwick Percy, 3/8/36 (J.M.B.).

- V.C. 63. Thorne (G.T.P. *Vict. Hist.*). Huddersfield, Dogley and Fenay Bridge (G.T.P. Coll., 29/7/89). Wakefield, New Mill Dam (G.T.P. Coll., 9/97, B.M.), Haw Park (G.T.P. Coll., 18/6/21, B.M.). Ryhill Res., 26/6/32 (W.D.H.).
- V.C. 64. York (G.T.P. *Vict. Hist.*). Gisburn, 23/7/32 (W.G.B.) Burnsall, 6-7/31 (W.G.B.).

Triænodes bicolor Curt.

- V.C. 61. Kilnwick Percy, 3/8/36 (J.M.B.).
- V.C. 62. Castle Howard (G.T.P. *Vict. Hist.*).
- V.C. 64. Fen Beck, Austwick, 26/6/25 (H.W.). Skipton, 8/32 (J.M.B.).

Oecetes ochracea Curt.

- V.C. 61. Skipwith (G.T.P. Coll., -/03, C.D.A.). Hornsea Mere (G.T.P. Coll., 8/6/08).
- V.C. 63. Denby, nr. Huddersfield (G.T.P. Coll., 6/97, B.M.). Ryhill Res., 25/6/32 (J.M.B.).

O. lacustris Pict.

- V.C. 65. Semerdale, 27/7/35 (J.M.B.).

O. notata Ramb.

- V.C. 64. Tadcaster (F.G.B.). (*E.M.M.*, 1880, p. 91.)

O. testacea Curt.

- V.C. 62. Castle Howard (G.T.P. Coll., 23-27/6/96).
- V.C. 64. Tadcaster (F.G.B.) (*E.M.M.*, 1880, p. 91). Abundant and associated with the previous species. Boston Spa (G.T.P. *Vict. Hist.*).

Adicella reducta McL.

- V.C. 62. Robin Hood's Bay, 2/7/37 (J.M.B.).

Family—MOLANNIDAE

Beræa pullata Curt.

- V.C. 63. Huddersfield (G.T.P. *Vict. Hist.*), Pennyspring Wood (G.T.P. Coll., 5/8/88), Dunford Bridge (G.T.P. Coll., 20/7/92).
- V.C. 64. Hebden, 26/7/29, Gisburn, 11/6/32, Burnsall, 6-7/31 (W.G.B.).
- V.C. 65. Dent, 6/6/33 (J.M.B.).

B. maurus Curt.

- V.C. 62. Kettleless, 4/8/27, 10/8/27 (H.W.). Hayburn Wyke (G.T.P. Coll., 15/8/03). Hole of Horcum, 31/8/37 (H.B.). Robin Hood's Bay, 8/7/37, 25/6/37 (J.M.B.).
- V.C. 63. Harden Clough, Kelbrook, 16/6/29 (W.G.B.). Pennyspring Wood, Huddersfield (G.T.P. Coll., 4/8/90).
- V.C. 64. Gisburn, 9-23/7/32 (W.G.B.).
- V.C. 65. Stalling Busk, 27/7/35 (J.M.B.).

Molanna angustata Curt.

- V.C. 61. Hornsea Mere (G.T.P. Coll., 8/6/08). Kilnwick Percy, 3/8/36 (J.M.B.).
- V.C. 62. Castle Howard (G.T.P. Coll., 13-22/6/96, 10/6/97).
- V.C. 63. Thorne (G.T.P. Coll., 18/7/91). Frizinghall, Bradford (G.T.P. Coll., 6/86). Huddersfield, Clayton West (G.T.P. Coll., 6/98, B.M.), Meltham Mill Res. (G.T.P. Coll., 4/7/00), Marsden (G.T.P. Coll., 10/6/11), Kirkheaton (G.T.P. Coll., 16/6/18), Haw Park, Wakefield (G.T.P. Coll., 27/8/10).
- V.C. 64. Fen Beck, Austwick, 26/6/25 (H.W.). Sherburn (G.T.P. Coll., 6/89, G.C.D.). Burnsall, 6-8/31 (W.G.B.).

(To be continued).

MEETING OF YORKSHIRE ENTOMOLOGISTS AT ASKERN

MAURICE D. BARNES

THE annual Field Meeting of the Entomological and Plant Galls Section was held in conjunction with the Union's excursion to Askeron on June 25th. The weather, although at times rather threatening, was good, and the district visited an excellent one for entomologists, as the accompanying lists show. We were fortunate in having present members whose individual interests are so varied. The writer is much obliged to Dr. W. J. Fordham for so kindly furnishing him with details relative to the new County and Vice-County records.

Mr. W. D. Hincks writes: I collected with Messrs. J. R. Dibb and P. Hartley, and the list below comprises the captures of myself (H.) and Dibb (D.) as far as the Coleoptera are concerned. The parasitic Hymenoptera (thirty species), Tenthredinidæ (ten species) and Hemiptera (of which Mr. Hartley took about twenty species) are not yet worked out. The presence of Mr. Cheetham on the excursion rendered unnecessary any extensive collecting of Diptera, and of the few species listed those of the families *Pipunculidæ* and *Cordyluridæ* have been kindly determined for me by Mr. Cheetham.

Several of the insects recorded are of more than usual interest and notes on these follow the list as indicated by the numbers in bold type after the specific name.

† Denotes new County record. * Denotes new Vice-County record.

Coleoptera (W. D. Hincks):

- | | |
|---|---|
| <i>Pterostichus nigrifera</i> F. (D.) | <i>Ptilinus pectinicornis</i> L. (H. and D.). 6. |
| <i>Agonum obscurum</i> Hb. (D.) | <i>Cis boleti</i> Sp. (H. and D.). |
| <i>Dromius quadrimaculatus</i> Pz. (H.) 1. | <i>Ennearthron cornutum</i> Gy. (H.). 7. |
| <i>Hydroporus planus</i> F. (H.) | <i>Octotemnus glabriculus</i> Gy. (H. and D.). |
| <i>Helophorus granularis</i> L. (H.) | <i>Strangalia maculata</i> Pod. (H.). |
| <i>Atheta</i> sp.? (H.) | * <i>Galerucella nymphææ</i> L. (H.). |
| <i>Olibrus æneus</i> F. (H.) | <i>G. tenella</i> L. (H.). |
| <i>Cerylon histroides</i> F. (H.). 2. | <i>Longitarsus suturellus</i> Df. (H.). |
| * <i>C. ferrugineum</i> S. (D.). 2. | <i>Crepidodera transversa</i> Mm. (H.). |
| <i>Brachypterus glaber</i> S. (H.). | <i>Chalcoides fulvicornis</i> F. (H. and D.). |
| <i>Meligethes viridescens</i> F. (D.). | * <i>Psyllodes affinis</i> Pz. (H. & D.). 8. |
| <i>Rhizophagus bipustulatus</i> F. (D.). | † <i>P. dulcamaræ</i> Kh. (H. and D.). 9. |
| <i>Cryptophagus dentatus</i> Hb. (H.). | <i>Pyrochroa serraticornis</i> Sp. (D.). |
| <i>Melasis buprestoides</i> L. (H. and D.). 3. | <i>Anaspis frontalis</i> L. (H.). |
| <i>Denticollis linearis</i> L. (H. and D.). | <i>Rhynchites longiceps</i> Th. (H.). |
| <i>Cyphon paykulli</i> Gu. (H.). | <i>Apion curtirostre</i> Sm. (H.). |
| <i>Silis ruficollis</i> F. (H. and D.). 4. | <i>Polydrosus cervinus</i> L. (H.). 10. |
| <i>Cantharis nigricans</i> Ml. (H.). | <i>Phyllobius urticæ</i> D.G. (H.). |
| <i>C. rufa</i> L. (H.). | <i>P. pyri</i> L. (H.). |
| <i>C. pallida</i> Gz. (H.). | <i>P. viridicæ</i> Lh. (H. and D.). |
| <i>C. fulvicollis</i> F. (H. and D.). | † <i>Dorytomus dejeani</i> Fst. (H.). |
| <i>C. bicolor</i> Hb. (D.). | * <i>D. melanocephalus</i> Pk. (H.). |
| <i>Rhagonycha testacea</i> L. (H. and D.). | <i>Anthonomus rubi</i> Hb. (H.). |
| <i>R. limbata</i> Th. (H.). | <i>Cionus scrophulariæ</i> L. (H.). |
| <i>Malthodes marginatus</i> Lt. (H.). | <i>Cidnorrhinus quadrimaculatus</i> L. (H.). |
| <i>M. minimus</i> L. (H. and D.). | <i>Ceuthorrhynchus assimilis</i> Pk. (H.). |
| <i>Malachius bipustulatus</i> L. (H. and D.). | <i>C. contractus</i> Mm. (H.). |
| † <i>Dasytes plumbeus</i> Ml. (H.). 5. | * <i>Rhinoneus perpendiculis</i> Rc. (H.) |

NOTES ON CERTAIN SPECIES

1. Under oak bark.
2. Both species under oak bark.

3. This was our prize capture. The first example was found by Mr. Dibb emerging from its burrow in a dead oak trunk. With Mr. Hartley we worked assiduously for an hour, capturing fifteen examples of *Melasis*. The wood was exceedingly hard and the beetles therefore, difficult to extract. Previously recorded from the Doncaster district in the Victoria County History.

4. Previously recorded in Yorkshire only from Shirley Pool by Mr. Dibb.

5. An interesting capture. The *D. arosus* recorded in the circular did not occur.

6. Common with *Melasis* in oak.

7. A very interesting capture. In very hard, woody fungus on dead willow trunk.

8. Abundant on *Solanum dulcamara*.

9. A few specimens on *S. dulcamara*.

10. This is the true "*cervinus* L.", not "*pilosus* " to which many of our records are said to apply.

Mr. E. G. Bayford recorded the following beetles :

<i>Cantharis fulvicollis</i> F. var. <i>flavilabris</i> Fall.	<i>Strangalia maculata</i> Pod. var. <i>binotata</i> Muls.
<i>Rhagonycha fulva</i> Sc.	<i>S. maculata</i> Pod. var. <i>undulata</i> Ol.
<i>Malachius bipustulatus</i> L.	<i>Phædon tumidulus</i> Ger.
<i>Coccinella 7-punctata</i> L.	<i>Chalcoides plutus</i> Lat.
<i>C. 11-punctata</i> L.	* <i>Psylloides affinis</i> Pay.
<i>Cyphon variabilis</i> Th.	<i>Attelabus nitens</i> Scop.
<i>Pyrochroa serraticornis</i> Scop.	

The Rev. E. J. Pearce who devoted the whole of his attention to the Aquatic Coleoptera of the Shirley Pool area, sends the following report :

SHIRLEY POOL

<i>Haliplus obliquus</i> F.	<i>Hyphydrus ovatus</i> L.
<i>H. confinis</i> St.	<i>Hygrotus inaequalis</i> F.
<i>H. flavicollis</i> St.	<i>H. impressopunctatus</i> Sch.
<i>H. immaculatus</i> Aerh.	<i>Hydroporus palustris</i> L.
* <i>H. wehnckei</i> Aerh.	<i>H. pictus</i> F.
<i>H. fluviatilis</i> Aub.	<i>Ilybius fuliginosus</i> F.
<i>H. lineatocollis</i> Marsh.	<i>Helophorus brevipalpis</i> Bed.
<i>Laccophilus</i> and <i>Laccobius</i> spp. taken but not kept.	

GRASSY DIKE PARALLEL TO RUSHY MOOR LANE

Some of the above species, also :

<i>Agabus chalconatus</i> Pz.	<i>Ilybius obscurus</i> Marsh.
<i>A. sturmii</i> Gyll.	<i>Colymbetes fuscus</i> F.
<i>A. bipustulatus</i> L.	<i>Helophorus aquaticus</i> L.

Among many common species captured the writer records the following beetles of more than usual interest :

<i>Pterostichus oblongopunctatus</i> F.	* <i>Phytonomus arator</i> L.
† <i>Chrysomela menthastri</i> Su.	<i>Eccoctogaster scolytus</i> F.
* <i>Hypophloeus bicolor</i> Ol.—(In association with <i>E. scolytus</i> F.)	<i>E. intricatus</i> Rz.

Diptera.—Mr. C. A. Cheetham sends the following list of insects :

<i>Corethra plumicornis</i> F. (<i>Chaoborus crystallinus</i> Deg.).	<i>Molophilus griseus</i> Mg. (<i>bifilatus</i> Verr.).
<i>Ptychoptera contaminata</i> L.	<i>Pachyrrhina maculata</i> Mg. (<i>maculoso</i> Mg.).
* <i>Dicranomyia autumnalis</i> Stg.	<i>Tipula unca</i> Wd. (<i>longicornis</i> Schum.).
* <i>Helus</i> (<i>Rhamphidia</i>) <i>longirostris</i> Mg.	<i>T. luna</i> Wstf. (<i>lunata</i> L.).
<i>Limnophila fulvinervosa</i> Schum. (<i>lineolella</i> Verr.).	<i>Prionocera turcica</i> Fab. (<i>Tipula diana</i> Mg.).
<i>L. nemoralis</i> .	

- | | |
|-----------------------------------|---|
| <i>Empis vernalis</i> Mg. | * <i>Acroptena</i> (<i>Hydrophoria</i>) <i>caudata</i> Ztt. |
| <i>Hilara quadrivittata</i> Mg. | <i>Anthomyia phuvialis</i> L. |
| <i>Gymnopternus cupreus</i> Flin. | * <i>Sciomyza pallida</i> Flin. |
| * <i>Argyra diaphana</i> F. | <i>Tetanocera elata</i> F. |
| * <i>Platypeza atra</i> Mg. | <i>Loxocera aristata</i> Pz. |
| <i>Platychirus albimanus</i> F. | * <i>Scoptera vibrans</i> L. |
| <i>P. fulviventris</i> Meq. | <i>Palloptera trimacula</i> Mg. |
| <i>P. clypeatus</i> Mg. | <i>Nemopoda cylindrica</i> F. |
| <i>Melanostoma scalare</i> F. | <i>Napæa</i> (<i>Parhydra</i>) <i>quadripunctata</i> Mg. |
| <i>Syrphus corollæ</i> F. | |
| * <i>Ascia dispar</i> Mg. | |

Mr. W. D. Hincks reports the following Diptera :

- | | |
|-------------------------------------|-----------------------------------|
| * <i>Pipunculus sylvaticus</i> Mg. | * <i>Cordylura ciliata</i> Mg. |
| † <i>P. rufipes</i> Mg. ? | * <i>C. umbrosa</i> Lw. |
| <i>Pyrophæna granditarsa</i> Forst. | * <i>Cnemopogon apicalis</i> Mg. |
| <i>Helophilus pendulus</i> L. | * <i>Paralleloma alipes</i> Flin. |
| * <i>Tropidia sita</i> Harr. 1. | * <i>Calobata cibaria</i> L. |

1. Previously recorded in Yorkshire from Welwick, E. Yorks., by Hincks.

Neuroptera.—Recorded by Mr. E. G. Bayford :

- | | |
|-------------------------------------|---------------------------------|
| <i>Pyrrhosoma nymphula</i> Sutz. | <i>Chrysopa ventralis</i> Curt. |
| <i>Enallagma cyathigerum</i> Charp. | <i>Panorpa communis</i> L. |

YORKSHIRE NATURALISTS AT HEDON July 16th, 1938

HEDON is situated within the area that has the lowest rainfall in all Yorkshire, but when we arrived in the rain on July 16th we found that this rain had continued for three days and we were not surprised to find a very small gathering. Fortunately the weather improved and we were able to proceed with our excursions.

The botanists were fortunate in having the company of Mr. T. Petch, whose early work in natural history was done in this area. He pointed out several interesting plants, perhaps the most noteworthy being *Bupleurum tenuissimum* L. Then Mr. T. Stainforth took us to Saltend, and on the way showed us the Sea Wormwood, Sea Aster, and Sea Lavender. At King George Dock the rank vegetation was far too wet to traverse and trodden paths were followed so that only a few of the many interesting alien plants were seen.

On the dockyard wooden fence a few insects were sheltering from the wind and wet, and the following Diptera were collected :

- | | |
|---|--|
| <i>Chironomus plumosus</i> L. | <i>Syrphus corollæ</i> F. |
| <i>Erioptera trivialis</i> Mg. | <i>S. balteatus</i> Deg. |
| <i>Pachyrrhina lineata</i> Scop. (<i>histrion</i> F.). | <i>Morinia nana</i> Mg. |
| <i>Rhyphus fenestralis</i> Scop. | <i>Polietes lardaria</i> F. |
| <i>Platychirus albimanus</i> F. | <i>Mydæa atripes</i> Mde. |
| <i>Catabomba pyrastri</i> L. | <i>Pegomyia nigritarsis</i> Ztt. |
| <i>Syrphus luniger</i> Mg. | <i>Blepharoptera</i> (<i>Helomyza</i>) <i>serrata</i> L. |

Mr. E. Dearing says Lepidoptera were scarce due to bad, wet weather, the following species were noted :

- | | |
|---------------------------------|------------------------------------|
| <i>Hadena humuli</i> . | <i>Hyphena proboscidalis</i> . |
| <i>Camptogramma bilineata</i> . | <i>Acipitilia galactodactyla</i> . |
| <i>Melanippe montana</i> . | <i>Hpinephele ianira</i> . |
| <i>Xanthorhæ sociata</i> . | |

Mr. W. D. Hincks writing on the Water Beetles, near Hedon, says : Mr. Don Fisher and I arrived at headquarters too late to join either

party. In fact, my collecting was restricted to little more than a half-hour with the pond net at a small ditch near Salt End Jetty. The ditch was within a few yards of the Humber bank and was nearly hidden by long grass and other vegetation. The water, which was probably brackish, was shallow and contained a considerable accumulation of coarse vegetable detritus with patches of brownish iron deposit. In the short time available only four or five dips with the net could be made. These produced 168 examples of aquatic Coleoptera in 15 different species. No doubt several additional species could have been found had it been possible to spend more time at the ditch. An extended survey of the beetle fauna of the dykes and ponds in this district would, I am sure, well repay the labour involved.

Ceolambus parallelogrammus Ahr. Three examples; colour of elytra very variable.

C. impressopunctatus Schall. Common.

Hydroporus angustatus Sturm. A single example.

H. palustris Linn. Common.

H. memnonius Nic. Two.

H. pubescens Gyll. One.

H. planus Fab. Three.

Agabus conspersus Mars. Two.

A. bipustulatus Linn. Common.

Colymbetes fuscus Fab. One.

Dytiscus semisulcatus Müll. One pair.

Hydrobius fuscipes Linn. Abundant.

Anacaena limbata Fab. Three.

Ochthebius impressicollis Cast. Abundant.

Helophorus sp.? Abundant.

With regard to the *Helophorus* sp. this occurred in the greatest profusion and was rather variable in size. I believe that only one species is contained in my material, but in the present extremely unsatisfactory state of our knowledge of the genus this is best left unnamed.

The only other insects which I captured were *Atheta* sp.? on a stone on the river bank, *Quedius fuliginosus* Grav., *Rhagonycha limbata* Fn., and a single male of the Dipteron *Dolichopus festivus* Hal.

The ditch mentioned above also contained numbers of the curious pupae of the fly *Statiomya*. Two pupae were brought home and have since yielded two fine males of *S. riparia* Meig.

Mrs. Morehouse reports on the Conchological finds. The bank running parallel with the Humber and the woods visited on the return journey to headquarters did not yield many species of molluscs.

On the bank were many dead shells of *Helix nemoralis* L. and there was every evidence that given the right conditions there would be very great quantities of them. Mr. E. Dearing and his friend took 62 live snails, 34 being normal size and 28 v. *minor*, the following show the varieties found:

H. nemoralis v. *libellula*, 1 2 3 4 5 type.

H. nemoralis v. *libellula*, 0 0 0 0 0.

H. nemoralis v. *libellula*, s.v. *cuvieria* Moq. 0 0 3 0 0.

H. nemoralis v. *libellula*, s.v. 0 2 0 0 0.

H. nemoralis v. *libellula*, s.v. 0 0 0 4 0.

H. nemoralis v. *libellula*, s.v. 0 2 0 4 0.

H. nemoralis v. *libellula*, s.v. 0 2 3 4 0.

H. nemoralis v. *libellula*, s.v. 0 (2 3) 4 5.

H. nemoralis v. *libellula*, s.v. 1 2 0 4 0.

H. nemoralis v. *libellula*, s.v. *fremingriellea* Locard, 0 2 3 0 0.

H. nemoralis v. *libellula*, s.v. 0 (2 3) (4 5).

H. nemoralis v. *libellula*, s.v. *reaumuria* Moq. 1 2 3 (4 5).

H. nemoralis v. *rubella*, 0 0 0 0 0.

- H. nemoralis* v. *rubella*, s.v. 0 2 0 4 0.
H. nemoralis v. *rubella*, s.v. 0 2 3 4 5.
H. nemoralis v. *rubella*, s.v. 1 2 3 4 0.
H. nemoralis v. *rubella*, s.v. 0 2 3 4 0.
H. nemoralis v. *rubella*, s.v. 0 (2 3) 4 5.
H. nemoralis v. *rubella*, s.v. (1 2) 0 (4 5).
H. nemoralis v. *rubella*, s.v. (1 2) 0 4 5.
H. nemoralis v. *rubella*, s.v. 1 2 0 (4 5).
H. nemoralis v. *rubella*, s.v. *rosea-quinquefasciata* 1 2 3 4 5.
H. nemoralis v. *rubella*, s.v. 1 2 3 (4 5).
H. nemoralis v. *rubella*, s.v. 0 (2 3) (4 5).

Hygromia hispidula and *Sheba cantiana* Montagu were taken on the herbage on the outskirts of the woods.

Mr. T. Petch, who occupied the Chair at the evening meeting, remarked upon many species he was able to find when resident in Hedon which were now non-existent or practically extinct.

The Vertebrate Section left Hedon soon after 11 a.m. in the rain for Paull, led by Mr. C. F. Procter; here a good view of the extensive mud flats on the Humber estuary was obtained, then on to Cherry-cob Sands. On arrival, we walked towards the Humber bank through grass fields where we saw some interesting birds, two little Owls were flushed and the nesting holes seen, also the Little Grebe and Waterhen.

Over the banks we went on to the Outstray which is covered by the fortnightly spring tides; Shelduck, Green Plover, Curlew, Redshank, Shore and Tit Larks were seen feeding among the shallow pools and on the mud flats were many Gulls and Waders. We proceeded eastward towards Old Well Creek. We were interested in the extensive patches of plant seeds deposited at high spring tide level, several Mallard were seen in flight here. The party returned by the fields to Long Plantation and here a fox larder was examined, at another larder seen later bird remains such as Rook, Partridge, and Dunlin were seen. In one plantation we saw the Tree Creeper, Little Owl, Stock Dove, and Carrion Crow. Along the drain two Herons were put up and then back to Hedon. The bird which attracted most attention was the Corn Bunting, it was in pairs everywhere along the roads and was best seen on prominent boughs and on telegraph wires. Altogether 41 species were seen as per the following list: Chaffinch, Robin, Corn Bunting, Yellow Hammer, Flycatcher, Yellow Wagtail, Pied Wagtail, Swallow, House Martin, Ring Dove, Stock Dove, Garden Warbler, Green Linnet, Meadow Pipit, Skylark, Tree Creeper, Starling, Thrush, Blackbird, Sparrow, Hedge Sparrow, Lesser and Great Black-backed Gull, Heron, Carrion Crow, Curlew, Redshank, Water Hen, Coot, Little Grebe, Green Plover, Partridge, Shelduck, Mallard, Dunlin, Little Owl, Rook, Magpie, Jackdaw, and Kestrel. C. W. Mason and Chas. F. Procter.

YORKSHIRE NATURALISTS AT SEDBERGH

SEDBERGH has frequently been visited by the Yorkshire Naturalists' Union, but we can still find fresh ground in this area. This time the border line between Yorkshire and Westmorland was planned as the main item of work. The County boundary from the junction of Backside Beck with the Rawthey follows the latter for some three miles to where Needlehouse Gill joins it and then follows this to the watershed between Wild Boar Fell and Swarth Fell. Needlehouse, or, as it is called locally, Needle's Gill, is difficult to explore, the Yoredale rocks being tilted at a steep angle and the place difficult of access. Then the weather took a hand in making things more difficult and a steady rain damped the ardour of the very small party who made the journey and so Needle's Gill is still unknown to the Union. However, we saw *Carex pallescens* L.

and *Habenaria chlorantha* Bab. in a damp meadow at the foot of the Gill and *Mimulus* established in a small streamlet. Difficulties of transit made it necessary to alter the arrangements on the Circular, and Longstone and Frostraw Fells were visited on Sunday, leaving the Cautley area for Monday when the weather made amends for the week-end. Here we first followed the Rawthey to within a mile or so of Needle's Gill visiting a small pothole where *Circaea alpina* L. was found and with it were some interesting mosses, *Hylocomium brevirostre* B. & S. and *Seligeria tristica* B. & S. The latter appeared to be the habitat for the larvæ of the rare dipterous fly, *Orimarga virgo* Zett. and possibly also that of another of these smaller crane-flies, *Amalopsis straminea* Mg. Then we returned to visit Cautley Spout for this well-known corner cannot be omitted when in the Sedbergh district.

A full list of the diptera taken during the week-end is as follows :

<i>Simulium latipes</i> Mg.	<i>T. luteipennis</i> Mg.
<i>S. variegatum</i> Mg.	<i>T. lateralis</i> Mg.
<i>Dicranomyia aquosa</i> Verr.	<i>Microchrysa polita</i> L.
<i>D. autumnalis</i> Stg.	<i>Leptis scolopacea</i> L.
<i>D. didyma</i> Mg.	<i>L. lineola</i> F.
<i>D. lucida</i> de Mj.	<i>L. notata</i> Mg.
<i>Ilisiaoccoecata</i> Edw.	<i>Hybos grossipes</i> L.
<i>Molophilus medius</i> de Mj.	<i>Hilara interstincta</i> Flin.
<i>M. cinereifrons</i> de Mj.	<i>H. chorica</i> Flin.
<i>M. appendiculatus</i> Staeg. (<i>armatus</i> de Mj.).	<i>H. (Oreogeton) flavipes</i> Mg.
<i>M. serpentiger</i> Edw. (<i>propinquus</i> Verr.).	<i>Gymnopternus (Hercostomus) aerosus</i> Flin.
<i>Ormosia nodulosa</i> Mcq.	<i>Dolichopus vitripennis</i> Mg.
<i>Erioptera taenionota</i> Mg.	<i>D. wahlbergi</i> Ztt.
<i>Dactylolabis transversa</i> Mg. (<i>gracilipes</i> Lw.).	<i>Hypophyllus obscurus</i> Fal.
<i>Limnophila phæostigma</i> Shm.	<i>Syrphus torvus</i> O.-S.
<i>L. lineola</i> Mg.	<i>Sphegina clunipes</i> Flin.
<i>L. ferruginea</i> Mg.	<i>Dryinia hamata</i> Flin.
<i>L. ochracea</i> Mg.	<i>Pegomyia nigrivarsis</i> Ztt.
<i>L. squalens</i> Ztt. (<i>bicolor</i> Mg.).	<i>Scatophaga suilla</i> F.
<i>Orimarga virgo</i> Ztt.	<i>Suilla (Helomyza) inornata</i> .
<i>Amalopsis straminea</i> Mg. (<i>schineri</i> , <i>geniculata</i>).	<i>S. (Helomyza) notata</i> Mg.
<i>Trichocera regelationis</i> L.	<i>S. (Helomyza) fuscicornis</i> .
<i>Pachyrrhina crinicauda</i> Rdl.	<i>Chætomus (Blepharoptera) flavotestacea</i> Ztt.
<i>P. maculata</i> Mg.	<i>Neuroctena analis</i> Flin.
<i>Tipula scripta</i> Mg.	<i>Tetanocera elata</i> P.
	<i>Sapromyza virida</i> Flin.
	<i>S. inusta</i> Mg.

Mr. E. Dearing noted three butterflies, the Common Blue, Small Heath, and the Small Tortoiseshell, also a few Mollusca : *Helix nemoralis*, *H. rufescens*, *H. rotundata*, *Clausilia laminata*, *C. bidentata*, *Pupa muscorum*, and at Cautley Spout, *Ancylus fluviatilis* with shells very thin and fragile.

Dr. W. A. Sledge writes : The excursion to Frostraw Fell was devoted to a search for *Malaxis paludosa* which was eventually found in two rather widely separate localities. Some nice patches of *Anagallis tenella* were seen and *Vaccinium oxycoccus* was very plentiful here and *Utricularia minor* was collected but little else of interest was seen in this area and the bogs, though extensive, were surprisingly poor in Cyperaceæ. The excursion to Cautley provided most of the well-known species in that area such as *Saxifraga stellaris*, *Epilobium alsinifolium*, *Alchemilla alpina*, *Myosotis brevifolia*, *Pyrola secunda*, and *Cyptogamma crispa* but I was unable to find the hybrid, *Epilobium alsinifolium* and *palustre* which has been recorded from here.

Above Rawthey Bridge in a small pothole by the river, plants of the true *Circaea alpina* were seen. It differs from the Luneside, Howgill, plants of *Circaea intermedia* in its club-shaped fruits and smaller flowers. It is recorded for many stations in the Lake district but, like *Alchemilla alpina*, its occurrence in Yorkshire appears to be limited to the Sedbergh district.

Mr. H. B. Booth writes : Mr. W. F. Fearnley and the writer spent Sunday at the Sedbergh excursion. The following were the chief birds seen : Raven, Carrion Crows, Herons, Common Sandpipers, and Dipper. The most noteworthy item was the body of a Great Black-backed Gull, hung up as a scarecrow—a bird that is rarely seen inland. Near Dent the dead body of a House Martin was suspended from the telegraph wires. It had taken an angler's fly, and the cast had evidently broken and become entangled in the wires, thus causing its death by hanging.

In the other orders the only note of interest was that two dead Hedgehogs were seen on the road, killed by traffic. Probably this little mammal suffers more than any other through the increasing road traffic. It is mainly nocturnal in its habits, and its chief defence is to curl itself up in face of danger.

Mr. J. P. Utley adds : I was able to attend only the Monday meeting of the excursion and my notes must therefore be confined to observations made on that day.

At various points throughout the day I am glad to say that Wheatears were seen. Throughout V.C. 65 this bird now seems to be getting back to its normal status. Redstarts were also very plentiful. On my run down Garsdale in the morning Lesser Whitethroat and Willow Wren were seen, also Goldfinch and Greenfinch, the latter on numerous occasions making attempts at song. By Garsdale Beck and later by the Rawthey were Dippers and Sandpipers. More Tits were observed in Garsdale than at any other point during the day, though the Marsh Tit was recorded at Rawthey Bridge.

From Rawthey Bridge I climbed to the summit of Blue Caster, and here on the moorland Lapwing, Curlew, and Snipe were plentiful, while Golden Plover and Redshank occurred in fair numbers. Nowhere were game birds much in evidence. From here I had a splendid view of the effortless, gliding flight of a Buzzard that appeared from the shoulder of Wild Boar Fell and swept across the valley in a series of wide circles to disappear behind Great Dummocks.

Leaving Blue Caster I went down to Haygarth and followed the stream up to Cautley Spout ; apart from Meadow Pipits and Skylarks little bird life was seen. At Cautley Spout itself I found Grey Wagtail, Willow Wren, Song Thrush, Wren, and Robin. I climbed to the summit, went round the crags, over Great Dummocks, and down to the stream again. On the high ground was a distinct falling off and sparsity in bird life as compared with the stretch between Blue Caster and Wild Boar and East Baugh Fells, but I was fortunate when climbing out of a depression to get an admirable 'close-up' of three Ravens (one adult and two young). They flew across to the shoulder of The Calf where I left them feeding. Throughout the day other members of the Crow family were noticeable by their absence.

Mr. Cheetham reported setting up a Heron from near the Rawthey.

After the meeting, Dr. Sledge and myself made a further excursion to a hitherto unvisited portion of the district, and here I saw a female Ring Ousel with food in its mouth, evidently feeding a late brood. A few Linnets were also noticed here and Lesser Redpols were evident in the valley bottom, also a Magpie—very much so !

But undoubtedly the star turn of the evening watched by Dr. Sledge and myself for about twenty minutes was the gambolling of four Peregrines in playful flight. How they could approach, caress each other, and yet maintain their high speed without collision was amazing. Eventually they went to roost and in the deepening shade we left them.

THE VEGETATION OF YORKSHIRE AND SUPPLEMENT TO THE FLORAS OF THE COUNTY

(Continued from page 220)

DIPSACEÆ

Dipsacus sylvestris Huds. (*fullonum* L.).

D. pilosus L.

Not seen recently in many of the old stations. Fountains Abbey and Studley policy. W. Foggitt in Bogg, Vale of Mowbray (1909); Smeaton-Brocodale, Y.N.U. Excursion, *Nat.*, 1937, p. 258.

Cephalaria transylvanica Schrad.

A second station for this alien is Heworth brickfields, York, H. Stansfield, 3/9/09; it occurred at Mirfield with *Scabiosa australis* (Wulf.) Rchb. in 1908.

Scabiosa Columbaria L.

S. Succisa L.

S. arvensis L. (*Knautia*).

COMPOSITÆ

Eupatorium cannabinum L.

Some further West Riding records are Ingleton-Burton, Kingsdale, Y.N.U., 1911, Roundhay, Kippax, Arncliffe, Grasswoods.

var. *indivisum* DC., Coxley Dam, 1896, O. W. Richardson spn. ! ex. P.F.L., who in 1909 sent the normal leaved type so located.

Calotis cuneifolia Br. and *C. hispidula* F. v. Müller.

Have occurred on waste heaps in the Heavy Woollen District.

Bellis perennis L.

Status *discoideus* ! a form devoid of ray florets, found at Flamborough by J.F.P.

Callistemma hortense Cass.

Found on garden tips and in the quarry at Sandal, that produced *Odontospermum aquaticum* (L.) Schultz.

Aster Tripolium L.

A. novi-belgii L.

The 'Michaelmas Daisy' under many names *paniculatus*, *panicus*, *longifolius* and *lævis* has often been reported as a garden outcast.

Erigeron acer L.

E. canadensis L.

Casual with *E. strigosus* Muhl. (*ramosus* Walt.) and *divaricatus* Michx. Occurred to P.F.L. and myself on Calder-side and at Exley's fellmongery, West Meanwood.

Filago spathulata Presl.—*F. apiculata* G. E. Sm.

Not given in East Riding Flora or North Riding Flora, but these colonists are pretty generally distributed, wanting only the precise systematists attention. They are merely differentiations from *F. germanica*.

F. germanica (L.) Huds.

F. minima Pers.

More like a naturally spontaneous integer than *F. germanica*, since often away from cultivated heys.

Antennaria dioica (L.) Gaertn.

Some further areas are Slaidburn uplands, Y.N.U., 1909—Gordale, Hawskwick, Kettlewell, W. West—Upper Yoredale !—Middlesmoor and Great Whernside.

Anaphalis margaritacea C. B. Clarke

This one-time common escape seems to have gone from nearly all the old stations ; with *Gnaphalium undulatum* L., *G. luteo-album* L., and *G. albescens* L., it has occurred at Meanwood, Frizinghall and Calderside.

Gnaphalium uliginosum L.

G. sylvaticum L.

Some other records are for Slip Gill, Rievaulx, Wilstrop sidings, Linton (field corner near footway to Wetherby) C.A.C. !

Inula squarrosa (L.) S. & T. (*Conyza* DC.).

Not known in East Riding.

Generally on magnesian limestone ; W. Foggitt gives ' Copsy hillside over Old Byland ' ; on mountain limestone in Cave Haw Wood, near Giggleswick, C.A.C., 1932.

Pulicaria dysenterica Bernh.

Other stations are Buckden (800 ft.), J.F.P. ; Littondale, *Nat.*, '07, 355.

Parthenium Hysterophorus L.

Once got on waste ground at Mirfield, *Nat.*, 1912.

Odontospermum aquaticum (L.) Schultz.

An ingredient in Parrot seed mixtures, has been found with *Wedelia* (*Silphium*) *perfoliata* Willd., with these we may put

Guizotia abyssinica Cass, *Ambrosia artemisifolia* L., *A. integrifolia* Willd., *Xanthium spinosum* L., *X. Strumarium* L., *Helipterum hyalospermum* F. Müll., *H. corymbiflorum* Schlecht., *Siegesbeckia orientalis* L., *Madia glomerata* Hook., *Galinsoga* sp., *Stuartina Muelleri* Sond., *Rudbeckia amplexicaulis* Vahl., vel. *R. hirta* L., *R. laciniata* L., *Helianthus multiflorus* L., *H. decapitatus* L., *H. (Harpalium) rigidus* Desf., *H. tuberosus* L., *H. annuus* L., *Hemizonia Fitchii* A. Gray, *H. pungens* T. & G., *H. fasciculata* T. & G., *H. multiglandulosa* A. Gray.

***Bidens cernua* L.**

On the decline by our waters now.

var. *radiata* DC. (perhaps=*B. chrysanthemoides* Michx.) by the canal side, Selby.

***B. tripartita* L.**

The var. *integra* Koch. is not rare. I have seen it on the canal side from above Skipton to Armley.

***B. pilosa* L.**

Occurred on Sewage Tips at Frizinghall to F.R. in 1905, and at Shipley to J. Cryer circa 1920. Other aliens that have been reported from various places are *Villanova dissecta* DC., *Tagetes micrantha* Cav., *Anacyclus clavatus* Pers., *A. radiatus* Lois., *A. valentinus* L.

***Achillea Millefolium* L.**

The var. *alpestris* Wimm. & Grab. has occurred on Howgill fells on slate !

***Achillea Ptarmica* L.**

***A. tomentosa* L.**

A garden escape ; *A. tanacetifolia* All., cornfield casual ; also *A. decolorans* Schrad. (*A. serrata* Sm. non Retz.), *A. Ageratum* L., *A. borealis* Bongard., *A. ligustica* All., *Santolina Anthemoides* L. (*Achillea cretica*), and *S. Chama-cyparissus*. L., *Artemisia Dracunculoides* Pursh.

***Anthemis arvensis* L.**

Area general, other Anthemides are casual in crops or waste ground as, *A. tinctoria* L. (often rayless), *A. nobilis* L., *A. altissima* L., *A. ruthenica* Bieb., *Cladanthus arabicus* Cass. and *C. canescens* Sweet.

***A. Cotula* L.**

***Chrysanthemum segetum* L.**

***C. Leucanthemum* L.**

Chrysanthemum Parthenium (L.) Bernh.

Is a well-established alien, others are *C. Myconis* L., *C. coronarium* L., *C. Balsamita* L.

Matricaria maritima L.

Only in the East Riding Flora is this confused with the 'salina' evolution of *inodora*.

M. inodora L.

Under marine influences this is modified into *salina* Bab.

M. Chamomilla L.

The form '*discoidea*' of the 1888 Flora was, I think, the then indiscriminated *M. suaveolens* (Pursh.) Buch.

M. suaveolens (Pursh.) Buch.

First noted at Thorne, about 1870 ! (I then called it *discoide Chamomilla*), now recorded for most areas, some early notes are, J. Beanland, *Yorkshire Wkly. Post*, 21/9/07. Long in one place but now in district all around Seacroft and Thorner, 1906, J.F.P.; 'Too common near Clapham, 1911, C. E. Salmon, M.S.'; Bostree Mill, Wheatley, C. Crossland, 1908.

M. decipiens C. Koch.

A barley alien, Shepley. *Cotula aurea* Loefl. (? *M. disciformis* DC.), Hull, C.W. teste S.T.D.

Tanacetum vulgare L.

Artemisia Absinthium L.

A. maritima L.

Not in the West Riding.

A. vulgaris L.

Other *Artemisia*s that have been noted are *A. pontica* L., York, H.S., 1907; *A. campestris* L., Hull docks, J.F.R.; *A. biennis* Willd., Queen's Road, Bradford, J.C., 1913.

Tussilago Farfara L.

Petasites ovatus Hill *cum hybrida* L. (the hermaphrodite, with abortive stamens).

Doronicum Pardalianches L.

An alien that is well established, and *D. plantagineum* L. more rarely and only in the North Riding.

Senecio sarracenicus L.

No station known for the East Riding. New localities are Browsholme Woods, J.F.P., 1896; Halton Gill, Rev. W. A. Shuffrey; and Beckermonds, T.B.W.

Senecio aquaticus Hill.

S. Jacobæa L.

S. erucifolius L.

Hybrid *S. Jacobæa* × *S. erucifolius* (*S. Whitwellianus* Mihi.).
Aiton, Bellbusk ! W. Whitwell, 1885 ; near Skipton (!) ;
near Soothill Colliery, 1887 ! *cum* P.F.L. ; Bardsey-Collingham,
1900, J.F.P., and again in 1909.

S. squalidus L., *S. vernalis* W. & K., *S. lautus* (Sol.) Rich.
Casual aliens.

S. viscosus L.

Further localities are Railway side Thorner-Bardsey J.F.P.
1901. Morley pithills, C.A.C. Savile Town, Dewsbury, P.F.L.,
Thorne Waste [and Quay 1870 !] 'The aromatic-scented,
radiant species,' J. K. Miller in the Walkeringham Neighb.
List of 1840 (*Nat.*, May, 1895). No one seems to have noted
this of late years on the 'Waste.'

S. sylvaticus L.

The var. *auriculatus* Meyer is usually seen in suspicious
sites only, about skin-yards, and within the land radii of
seaports.

S. vulgaris L.

The var. *radiatus* Koch. is purely alien, often noticed
where buildings are being erected.

S. (Cineraria) spathulifolius DC. (*S. campestris*).

Only in the North Riding Flora and Mr. C. E. Salmon
who visited the locality in 1911, writes : '*S. spathulifolius*
can be expunged from your lists as a Yorkshire plant,
Backhouse's record and my locality (one and the same, I ascer-
tained) is in Westmorland. This I say in spite of Baker's
record.'

Calendula officinalis L. and *C. arvensis* L.

Are never more than summer aliens and *Xeranthemum*
annuum L. and *cylindricum* Sm. have occurred as garden waifs
or shipping strays.

Carlina vulgaris L.

Arctium Lappa L. (*A. majus* Bernh.)

Not given in North Riding Flora.

A. intermedium Lange.

A. minus (Hill) Bernh.

Cousinia tenella F. & M., *Echinops Ritro* L.

Have occurred as aliens.

Carduus nutans L.

Hyb. *C. Newbouldii* H. C. Wats. A new area for this is the Malham Moor area from Skirethorns Warren over Bordley Mastiles.

Carduus crispus L.

The var. *acanthoides* (L.) is a cross or a reversion from Newbouldian hybrids.

C. pycnocephalus L.

Only an alien in Yorkshire, the so-called native var. *tenuiflorus* Curtis is very much like a casual, in sandy fields and about collieries. The Market Weighton record in East Riding Flora was a misnaming teste J.F.R. *m.s.*

Cirsium eriophorum (L.) Scop.

Hyb. *grandiflorum* Kittel (*C. lanceolatum* × *eriophorum*) *in opinion* G. C. Druce, Edgehill Craggs, Thorner! *cum* J.F.P., 1909.

C. lanceolatum Scop.

The var. *hypoleucum* DC. From rail banks and waste 'tip' stations about Bingley, Saltaire, and Calverley.

C. argentatum L., C. monspessulanum Hill., C. oleraceum (L.), Scop., Cnicus benedictus L., Carthamus tinctorius L., C. lanatus L., and Scolymus hispanicus L.

Have been noted as aliens.

C. heterophyllum (L.) Hill.

Not in East Riding Flora.

Hyb. *C. carolorum* Jenner. (*Wankelii* Reich.) (*C. heterophyllum* × *palustre*). I have seen this at Gunnerside, Upper Wensleydale, Linn Gill and West Bastow Wood.

C. acaule (L.) Weber.

Not in East Riding Flora and the note in *The Naturalist*, 1891, p. 177, is an almost certain error for *Carlina*.

C. pratensis Huds.

C. arvensis (L.) Scop.

var. *mite* Koch. Occurs as an alien as do var. *setosus* Bess. and var. *vestitus* Koch. at Hull dock wastes.

C. palustre (L.) Scop.

Onopordon Acanthium L., O. tauricum Willd., Mariana lactea Hill., and Lupsia Galactites (L.) O.K.

Occur as aliens.

Serratula tinctoria L.

Centaurea pratensis Thuill.

Perhaps brought with manure to site, Scalm Park Farm east of Bishopwood, Hambleton !

C. nigra L.

Centaurea Cyanus L. Colonist.

C. Scabiosa L.

C. intybacea Lam., *C. Solstitialis* L., *C. melitensis* L., *C. Calcitrapa* L., *C. diffusa* Lamk., *C. aspera* Willd., *C. napifolia* L., *C. iberica* Trev., *C. Verutum* L., *C. pallescens* Delile, var. *hyalolepis* Boiss., *C. (Microlonchus) salmantica* L., *C. montana* L.

Have been recorded as aliens.

Cichorium Intybus L.

C. divaricatum Schousb., *C. Endivia* L., *Arnoseris minima* (L.) Schw. & Koerte, *Rhagadiolus edulis* Gaertn. (*stellatus*) and *Tolpis barbata* Gaertn.

Are recorded as aliens.

Lapsana communis L.

Picris Echioides L. (*Helminthia*).

P. Hieracioides L.

Crepis mollis Aschers. (*C. succisifolia* Tausch.).

Not in East Riding Flora. Additional record, Buckden, in the open plentifully in a rough hill pasture, J. Cryer (*Bot. Ex. Club Rep.*, 1908). The record in *Nat.*, 1895, for Ecclesall Wood, if not a misnomer, is adventive.

C. paludosa (L.) Mœench.

C. biennis L.

Colonist. Some recent records are given by R. J. Flintoff in *Nat.*, 1936, p. 206. Burton Agnes, Howden, and Allerston.

C. setosa Hall. fil., *C. nicæensis* Balb., and *C. taraxacifolia* Thuill.

Are colonists.

C. tectorum L., *C. aurea* Reich., *C. grandiflora* Tausch. (*pulchra* L.), and *C. rubra*.

Have occurred as aliens or garden escapes.

C. capillaris (L.) Wallr. (*C. virens* L.).

Hieracium Pilosella L.

var. *concinatum* Hanb., Newton in Bowland, J.F.P. ! Jenkin Beck, Ingleton (Leys list in *Journ. Bot.*, 1909). Langcliffe (Settle), *Idem*.

H. stoloniflorum W. & K., **H. aurantiacum** L.

Are recorded as aliens.

H. anglicum Fr.

Not in East Riding Flora.

Hyb. *anglicum* × *Gibsoni*, Moughton Scars, Ley, and above Summer Lodge, Swaledale ! Ley, in his list (*Journ. Bot.*, Jan., 1909), admits a hyb. *anglicum* × *Hypochaeroides* var. *lancifolium* at Catterick Glen and Blue Scar, Arncliffe. var. *acutifolium* Backh., Chapel-le-dale, Ingleborough, and Pen-y-ghent, high, north-west—facing scars. var. *calcaratum* Lint., Ingleborough and Moughton, Ley list, the most abundant in Swale and Yore wherever *H. hypochaeroides* occurs. var. *brigitantum* Hanb., Clapham, Smersett, and Feizor. Ley list.

H. iricum Fr.

Not in East Riding Flora. Ley in his list dismisses it with 'not seen by me.' I do not think early exchanging collectors exterminated it but when living at Middleton in Teesdale, 1873-6, I had often difficulty in securing more than one or two specimens.

H. Schmidtii Tausch., var. *eustoma* Lint.

Cautley Spout. J.F.P. spn. ! This is what I always called *H. pallidum* Fr.

[**H. amplexicaule** L.]

[Neither Linton nor Ley include this and Oxford list No. 1537 italicises it as alien, but about Hawes and Gayle as long as I resided there 1883—1887 it was common enough.]

H. decolor A. Ley. (*H. caesium* Fr. var. *decolor*).

Not in East Riding Flora, dominant on the limestone scars in Lune, Ribble, Yore, Swale, and Wharfe, also on Dentdale Crags ! in Kingsdale and at Gordale.

H. Schmidtii Tausch.

Not in East Riding Flora, confined to slate and altered igneous rock, Teesdale, W. R. Linton. Cautley Spout, J.F.P. spn ! Also Ingleborough and Braidley Garth in Ley's list.

H. lasiophyllum Koch.

Not in North Riding or East Riding. Giggleswick Scar, 1853, Herb. Backhouse, Herb. Mus. Brit., *teste* A. Ley. Settle A Bennett. spns distributed as '*H. Gibsoni*' (Ley list). Malham. A form (Ley), J. Cryer.

(To be continued).

WATKINS & DONCASTER

NATURALISTS,

36, STRAND, LONDON, W.C.2

(Five doors from Charing Cross),

P.O. Box 126.

Telephone: Temple Bar 9451.

Keep in stock every description of

APPARATUS, CABINETS, BOOKS & SPECIMENS

for Collectors of

BIRDS' EGGS, BUTTERFLIES, MOTHS, Etc.

Catalogue (96 pages) sent post free on application.

Irish Naturalists' Journal

A Magazine of Natural History, Antiquities and Ethnology.

Published every Quarter by the I.N.J. Committee.

EDITED BY J. A. S. STENDALL, M.R.I.A., M.B.O.U.,
with the assistance of Sectional Editors.

Annual Subscription, 6/- post free.

Single Parts, 1/6.

All communications to be addressed to—

W. M. Crawford, B.A., F.R.E.S., F.Z.S., Hon. Sec.,
Orissa, Marlborough Park, Belfast.

COLLECTING APPARATUS.

Nets
Entomological Apparatus
Larva-Cages
Vivaria

Vascula
Plant-Presses, etc.
Pond-Nets
Collecting Tubes

Aquaria
Geologist's Apparatus
Dissecting Instruments
Microscopes, etc.

All requisities for indoor or outdoor work in every branch of
Natural History.

FLATTERS & GARNETT, LTD.,

309 OXFORD ROAD, MANCHESTER.

NORTH WESTERN NATURALIST

A SCIENTIFIC AND EDUCATIONAL JOURNAL (Published Quarterly),
especially for Cheshire, Cumberland, Derbyshire, Isle of Man,
Lancashire, North Wales, Shropshire, Staffordshire and Westmorland.

EDITED BY A. A. DALLMAN, A.L.S., F.C.S., in collaboration with

H. BRITTEN, F.R.E.S.

F. J. BROWN, M.Sc.

Rev. G. H. CARPENTER, D.Sc.

W. E. COLLINGE, D.Sc., F.S.A.

R. H. CORSTORPHINE, B.Sc., F.L.S.

R. J. FLINTOFF, F.L.S., F.Z.S., F.C.S.

H. E. FORREST, F.L.S.

J. W. JACKSON, D.Sc., F.G.S.

T. A. JONES.

H. W. MILES, M.Sc., Ph.D.

C. L. WALTON, M.Sc., Ph.D.

F. E. WEISS, D.Sc., F.R.S., LL.D.

A. WILSON, F.L.S., F.R.Met.S.

Communications to:—

Editorial—A. A. Dallman, A.L.S., F.C.S., 12 Tickhill Road, Doncaster.

Business—T. Buncle & Co., Ltd., Market Place, Arbroath.

Annual Subscription, 7/6. Single copies, 2/- net.

A NEW BOOK APPERTAINING TO THE ANCIENT
CITY OF YORK

A YORK MISCELLANY

Compiled from records
of the past four centuries

BY

I. P. PRESSLY, M.A.

ILLUSTRATED BY

ELLEN M. McLANE

*286 pages, Crown 8vo, with 24 Illustrations in Black and White,
and 9 Photographic Plates. Cloth Boards, Gilt Lettering.*

6/- NET.

Following much painstaking research work, the author of this book has succeeded in providing a truly kaleidoscopic representation of life in York during the past four centuries. The important part that the City has played in the history of England is clearly shown, and the reader is brought into intimate contact with many famous personages of their times. Altogether, it is an intensely interesting portrayal that should make a strong appeal to young and old alike, and the addition of plates and sketches is a feature that adds considerably to the attractiveness and to the historical value of the book.

Obtainable from all booksellers

A. BROWN & SONS, LIMITED
5 FARRINGDON AVENUE, LONDON, E.C.4

And at HULL

the NATURALIST

A MONTHLY
ILLUSTRATED JOURNAL
PRINCIPALLY FOR THE NORTH OF ENGLAND



Edited by

H. PEARSALL, D.Sc., F.L.S., and W. R. CRIST, B.Sc.,
The University, Leeds.

with the assistance as referees in special departments of

H. B. Booth, F.Z.S., M.B.O.U.

J. M. Brown, B.Sc., F.R.E.S.

W. H. Burrell, F.L.S.

Chris. A. Cheetham, F.R.E.S.

W. J. Fordham, M.R.C.S., L.R.C.P.,

D.P.H.

Riley Fortune, F.Z.S., F.R.P.S.

Professor A. Gilligan, D.Sc., F.G.S., M.I.M.E.

Mrs. Elsie M. Morehouse.

Thos. Sheppard, M.Sc., F.G.S., F.Z.S.

T. W. Woodhead, Ph.D., M.Sc., F.L.S.

Contents

PAGE

The Correlation of the Coal Measures in North Wales— <i>R. Crookall, D.Sc., Ph.D.</i>	301-305
Collembola from some Derbyshire Caverns— <i>James M. Brown, B.Sc., F.R.E.S.</i>	306
Stone Axes and Arrow Heads in Folklore— <i>W. J. Clarke, F.Z.S.</i>	307-311
Records	311-312
The Ideal Curator	312
A Morchelloid Cortinarius— <i>A. E. Peck</i>	313-314
Correspondence	314
News from the Magazines	305, 314
The Trichoptera or Caddis-flies of Yorkshire— <i>James M. Brown, B.Sc., F.R.E.S., and H. Whitehead, B.Sc.</i>	315-319
Yorkshire Naturalists' Union: Vertebrate Zoology Section— <i>E. Wilfred Taylor</i>	320-321
Phallus impudicus: A Query— <i>D. W. Bevan</i>	322
Reviews and Book Notices	322
The Vegetation of Yorkshire and Supplement to the Floras of the County— <i>(the late) Dr. F. A. Lees—Edited by C. A. Cheetham</i>	323-324

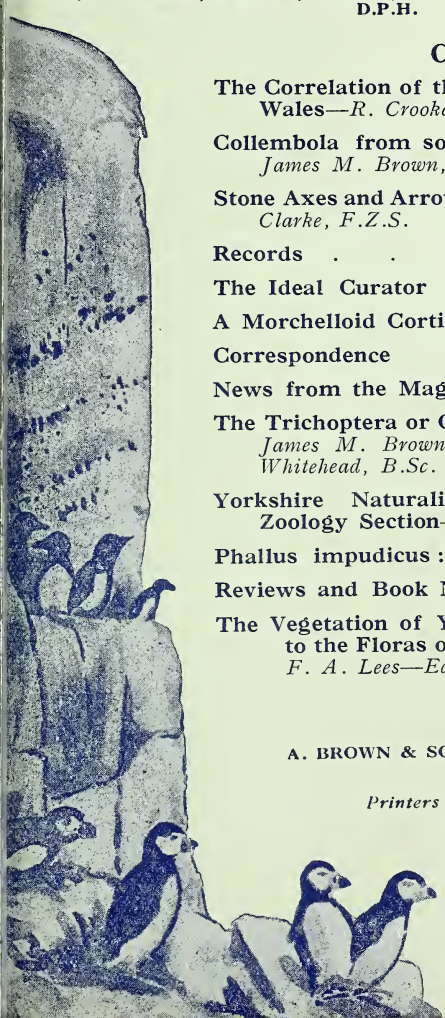
LONDON:

A. BROWN & SONS, Ltd., 5 Farringdon Avenue, E.C.4
And at Hull.

Printers and Publishers to the Y.N.U.

PRICE 1/6 net.

Prepaid Subscription
15/- per annum.



A NEW BOOK APPERTAINING TO THE ANCIENT
CITY OF YORK

A YORK MISCELLANY

Compiled from records
of the past four centuries

BY

I. P. PRESSLY, M.A.

ILLUSTRATED BY

ELLEN M. McLANE

*286 pages, Crown 8vo, with 24 Illustrations in Black and White,
and 9 Photographic Plates. Cloth Boards, Gilt Lettering.*

6/- NET.

Following much painstaking research work, the author of this book has succeeded in providing a truly kaleidoscopic representation of life in York during the past four centuries. The important part that the City has played in the history of England is clearly shown, and the reader is brought into intimate contact with many famous personages of their times. Altogether, it is an intensely interesting portrayal that should make a strong appeal to young and old alike, and the addition of plates and sketches is a feature that adds considerably to the attractiveness and to the historical value of the book.

Obtainable from all booksellers

A. BROWN & SONS, LIMITED
5 FARRINGDON AVENUE, LONDON, E.C.4
And at HULL

THE CORRELATION OF THE COAL MEASURES IN NORTH WALES

R. CROOKALL, D.Sc., PH.D.

UNTIL recently the only lists of fossil plants from the Coal Measures in North Wales were those given in the various *Memoirs of the Geological Survey*. In 1936 Dr. Alan Wood (3) published a revision of the known flora of the area and included a number of new records. He compared the floras with those proposed in 1933 for the divisions of the Coal Measures in South Wales by Dr. Emily Dix (2), concluding that the 'plant-bearing beds in North Wales certainly contain three of these zones.' The paper is a valuable résumé of the floral succession in North Wales. Examination of his records will show, however, that none of Dr. Wood's correlations is satisfactory.

Dr. Wood (3, p. 43) (1) considered that the presence of 'Zone C' of the South Wales scheme 'is shown by the occurrence of *Neuropteris schlehani* forma *rectinervis* in the lowest beds at Nant Coetia Tail (Holywell) and Nant y ffynnon Lwyd (Mostyn)'; (2) 'Flora D (zone of *Alethopteris lonchitica* and *Neuropteris heterophylla*) appears to be represented by the fossils from above the Wall and Bench [Coal] at Brynmally, the Two Yard [Coal] at the Point of Ayr, and the Ruabon Yard [Coal] at Brynmally Colliery and Delph Brickworks. The plants on which this determination is based are *Neuropteris heterophylla*, *N. obliqua*, *N. cf. tenuifolia*, and *Alethopteris decurrens*. *Calamites schuetzeiformis* and *Lepidodendron ophiurus* are also plants absent from lower levels in South Wales. The characteristic plants *Alethopteris lonchitica*, *Mariopteris muricata*, and *Calamites undulatus* have been recorded from these levels by the Geological Survey and serve to clinch the comparison.' But 'the presence of abundant *Sigillaria* is a point of difference from South Wales, where this plant is particularly characteristic of the next zone'; (3) 'The more abundant flora of the Main Coal belongs to the zone of *Lonchopteris rugosa*, *Neuropteris gigantea*, *Sphenophyllum myriophyllum*, etc. (Flora E). *Neuropteris gigantea* and *Alethopteris decurrens* are the main elements in the flora, which also includes the zonally important *Dactylothea plumosa* and *Sphenophyllum myriophyllum*. The plant recorded from Mancot as *Sphenopteris trigonophylla* Behrend may be identical with *S. dilatata* L. and H., and in any case is a member of the *obtusiloba-dilatata-trifoliolata* group so characteristic of this zone . . . Little evidence of the higher zones can be seen, for plants are not found in sufficient abundance in the higher beds. The flood of undoubted *Neuropteris heterophylla* high in the succession in the Moss Valley is

unexpected, since this plant is characteristic of Zone E in South Wales. It occurs more sparsely in the lower portions of Zone F, so that its presence does not necessarily indicate a mis-correlation.'

It will be seen that Dr. Wood did not, even provisionally, indicate the limits of any of the proposed divisions in North Wales, but merely referred two localities to 'Zone C,' three seams to 'Zone D' and one seam to 'Zone E.' Confining our attention to the localities and horizons thus determined, the records are given on p. 303, the numbers in the columns indicating how many localities yielded the various species.

The correlation of two of the North Wales localities with 'Zone C' in South Wales was based on the record of a single species—*Neuropteris schlehani*—but it must be observed that while *N. schlehani* is a characteristic plant of 'Zone C' in South Wales, it is also recorded from 'Zone D' in that area (2, p. 799). Until, therefore, a fuller flora is obtained from the North Wales localities the correlation must remain in doubt.

With regard to the reference of the three seams—the Wall and Bench, Two Yard, and Ruabon Yard Coals—to 'Zone D' of the proposed classification, this division in South Wales was described by Dr. Dix (2, p. 800) as including, as 'dominant' species, *Alethopteris lonchitica*, *Neuropteris heterophylla* (the two 'index' species), *Sphenopteris obtusiloba*, *Mariopteris muricata*, *Neuropteris obliqua*, *N. grangeri*, and *Alethopteris decurrens*, and that 'some of the more important species which make their appearance in this zone' were *Sphenopteris elegantiformis*, *Zeilleria delicatula*, *Sphenophyllum cuneifolium* forma *saxifragæfolium*, *Pinakodendron ohmanni* Weiss, *Calamites undulatus*, *C. schuetzeiformis* K. and J., and *Annularia microphylla*.

Comparing the flora obtained from the North Wales horizons with the above criteria, (1) each of the two index species was found at only one (of four) localities so that they cannot be described as dominant in 'Zone D' in North Wales; (2) on the other hand, both were recorded from several localities that were referred by Dr. Wood to 'Zone E'; (3) of the five other plants described as dominant in 'Zone D' in South Wales, two (*Sphenopteris obtusiloba* and *Mariopteris muricata*) were absent from the beds referred by Dr. Wood to 'Zone D,' two (*Neuropteris obliqua* and *Alethopteris decurrens*) were common to Zones 'D' and 'E' and one (*Neuropteris grangeri*) occurred in 'Zone E' only; (4) only one of the seven other 'important' species described as making their appearance in 'Zone D' in South Wales appeared in the supposed equivalent rocks in North Wales. It is evident that Dr. Wood's correlation of the Wall and Bench, the Two Yard,

Zone	'C'	'D'	'E'
Included seams	?	Wall and Bench, Two Yard, Ruabon Yard.	Main.
LYCOPODIALES.			
<i>Lepidodendron aculeatum</i> Stb.			4
„ <i>lanceolatum</i> Lesqx.		I	3
„ <i>lycopodioides</i> Kidst.		I	4
„ <i>obovatum</i> Stb.		I	4
„ <i>ophiurus</i> Brongt.		I	5
„ <i>peachi</i> Kidst.			2
<i>Lepidophloios acerosus</i> L. and H.		I	
„ <i>laricinus</i> Stb.			I
<i>Lepidostrobus lanceolatus</i> L. and H.			I
<i>Bothrodendron minutifolium</i> Boul.			4
<i>Sigillaria davreuxi</i> Brongt.		I	
„ <i>elongata</i> Brongt.			I
„ <i>lævigata</i> Brongt.		I	I
„ <i>mammillaris</i> Brongt.		I	I
„ <i>ovata</i> Sauv.		I	I
„ <i>rugosa</i> Brongt.		I	I
„ <i>tessellata</i> Brongt.			I
SPHENOPHYLLALES			
<i>Sphenophyllum cuneifolium</i> (Stb.)			2
„ <i>myriophyllum</i> Crép.			I
„ <i>saxifragæfolium</i> (Stb.)		I	3
EQUISETALES.			
<i>Annularia radiata</i> Brongt.			I
<i>Asterophyllites equisetiformis</i> (Schl.)			I
<i>Calamites approximatus</i> Brongt.			I
„ <i>suckowi</i> Brongt.		I	I
„ <i>undulatus</i> Stb.			I
FERNS AND PTERIDOSPERMS.			
<i>Alethopteris aquilina</i> (Schl.)			I
„ <i>decurrens</i> (Artis.)		I	4
„ <i>lonchitica</i> (Schl.)		I	3
„ <i>valida</i> Boulay.			I
<i>Dactylothea plumosa</i> (Artis.)			I
<i>Diplotmema furcatum</i> (Brongt.)			I
<i>Mariopteris acuta</i> (Brongt.)			3
„ <i>coarctata</i> (Stur.)			I
„ <i>dernoncourti</i> Zeill.			I
„ <i>hirta</i> Stur.			I
„ <i>nervosa</i> (Brongt.)			4
„ <i>sauveuri</i> (Brongt.)			I
<i>Neuropteris blissi</i> Lesqx.			I
„ <i>gigantea</i> Stb.		I	6
„ <i>grangeri</i> Brongt.			3
„ <i>heterophylla</i> Brongt.		I	3
„ <i>obliqua</i> Brongt.		I	3
„ <i>pseudogigantea</i> Pot.			2
„ <i>tenuifolia</i> (Schl.)			I
„ <i>Schlehani</i> Stur.	2		
<i>Rhodea sparsa</i> Kidst.			I
<i>Sphenopteris schatzlarensis</i> (Stur.)		I	
„ <i>striata</i> Gothan.			2
„ <i>trigonophylla</i> Behr.			I
CORDAITALES.			
<i>Cordaites principalis</i> (Germ.)			I

and the Ruabon Yard Coals with 'Zone D' in South Wales has insufficient basis in fact. His statement that *Mariopteris muricata* and *Calamites undulatus* are 'characteristic plants' (of 'Zone D') requires qualification. The latter is recorded in South Wales not only from 'Zone D' (where it is rare), but also from 'Zone E' (where it is widely distributed, though not common) from 'Zone G' (where it is common), and from 'Zone H.' The former was described both as a 'dominant species' of 'Zone D' and the 'most common' *Mariopterid* in 'Zone E' in South Wales (2, pp. 800, 804). Apart from this fact, *M. muricata* cannot be used in a comparison with the South Wales records until the diagnosis is clarified, since Dr. Dix (2, p. 804) considers that 'it is probable that it includes at least two new species.'

Turning to the reference of the Main Seam to 'Zone E,' the criteria of this zone in South Wales, according to Dr. Dix (2, p. 803), are (a) the 'index' species *Lonchopteris rugosa*, *Neuropteris gigantea*, *Sphenophyllum myriophyllum*, *S. majus*, *Annularia microphylla*, *Sphenopteris obtusiloba*, *S. dilatata*, *S. trifoliolata*, *S. laurenti*, and *Diploptemna furcatum*; (b) four additional species *Dactylothea plumosa*, *Alethopteris davreuxi*, *Mariopteris muricata*, and *Alethopteris decurrens*. Of these, *M. muricata* has already been the subject of comment above, while *A. decurrens* cannot characterise 'Zone E' in South Wales since it was also described as a 'dominant' species of 'Zone D' in that coalfield.

Comparing Dr. Wood's records from the Main Seam of North Wales with these criteria, we note that (a) of the ten 'index' species proposed for 'Zone E' in South Wales only three (*Neuropteris gigantea*, *Sphenophyllum myriophyllum*, and *Diploptemna furcatum*) are recorded from the Main Seam; (b) the last two of these were found at only one locality (out of six) whereas they are of more or less widespread occurrence in 'Zone E' in South Wales; (c) of the additional species which are said to characterise 'Zone E' in South Wales, *Alethopteris davreuxi* was unrecorded from North Wales and *Dactylothea plumosa* was found at a single locality in the Main Seam. This evidence is quite insufficient as a basis on which to refer the Main Seam to 'Zone E' of the South Wales scheme.

The review given above represents a comparison of Dr. Wood's floras with the criteria proposed for South Wales. In point of fact these proposed criteria are themselves by no means entirely satisfactory (Crookall, 1). A comparison of Dr. Dix's zonal species with the records shows that in South Wales Zones 'D' and 'E' are mainly to be distinguished from each other by negative criteria, viz., (a) the apparent absence from 'Zone D' of certain species, none of which, however, was recorded from more than three out of eight

horizons in 'Zone E,' i.e., of *Lonchopteris rugosa*, *Sphenophyllum myriophyllum*, *S. majus*, *Sphenopteris dilatata*, *S. trifoliolata*, *S. laurenti*, and *Alethopteris davreuxi*; (b) the apparent absence from 'Zone D' of certain forms (*Neuropteris tenuifolia*, *N. pseudogigantea*, and *N. callosa*) belonging to Flora F but occasionally found in 'Zone E'; (c) the positive criterion consists merely in the relative frequencies of the species common to both divisions; *Annularia microphylla*, *Neuropteris gigantea*, *Diploptemum furcatum*, *Alethopteris decurrens*, and *Dactylothea plumosa* appear to be of commoner occurrence in the higher division while *N. grangeri* is more frequent in the lower zone. The writer doubts whether these criteria will survive the test of further collecting in South Wales, and whether, if they do, they will characterise equivalent strata in other coalfields. This opinion is amply justified in relation to North Wales. Only three of the ten species which would be expected in 'Zone E' and not in 'Zone D' are actually recorded from any of the seams here under review. Of the six species which are common to both divisions in South Wales and which are of more frequent occurrence in one than the other, one (*Annularia microphylla*) is unrecorded from North Wales, two (*Diploptemum furcatum* and *Dactylothea plumosa*) are recorded from a single locality, and one (*Neuropteris grangeri*) was recorded from three out of six localities in 'Zone E' but not from 'Zone D,' whereas it would be expected to be commoner in the latter than in the former division. *Neuropteris gigantea* and *Alethopteris decurrens* appear to be more frequent at the Main Seam horizon than in the measures below.

It does not appear to be possible satisfactorily to correlate the strata of North Wales with Zones 'D' and 'E' in South Wales, either on the criteria proposed by Dr. Dix or on those indicated above by the present writer.

REFERENCES

1. Crookall, R., 'Floral Subdivisions in the Yorkian in South Wales,' *Geol. Mag.*, LXXV, 1938, pp. 346-352.
2. Dix, E., 'The Sequence of Floras in the Upper Carboniferous with Special Reference to South Wales,' *Trans. Roy. Soc. Edinburgh*, LVII, 1933, pp. 789-838.
3. Wood, A., 'New Records of Plants from the Coal Measures in North Wales,' *Proc. Liverpool Geol. Soc.*, XVII, 1936, pp. 29-44.

NEWS FROM THE MAGAZINES

The Entomologist's Monthly Magazine for October contains 'A Preliminary List of the Coleoptera of Windsor Forest,' by H. Donisthorpe; 'A New Genus and Species of Tenebrionid Beetles in Beehives in India,' by K. G. Blair; 'The Aquatic Coleoptera of North and South Lincolnshire,' by F. Balfour-Browne; 'Some Homoptera new to the British List,' by W. E. China; and several shorter notes.

COLLEMBOLA FROM SOME DERBYSHIRE CAVERNS

JAMES M. BROWN, B.Sc., F.R.E.S.

THROUGH the kindness of Lieut.-Col. E. A. Glennie, I have had the opportunity of examining a small collection of Collembola obtained by the sender from several of the well-known caverns of Derbyshire. Though none of the species found can be regarded as belonging essentially to the fauna of caves, all of them occurring in the open, it is interesting to note that all the species mentioned below are to some extent adapted to life in darkness, being either eyeless or having a reduced number of eyes, and when living as they commonly do in the open, are to be found under stones or logs more or less deeply buried in the ground, and hence to a greater or less extent existing under conditions of darkness. Typically the majority of Collembola have a complement of eight simple eyes or ommatidia situated on either side of the head in the midst of a patch of dark pigment. In the species listed below, the number of ommatidia present on either side of the head is indicated by the numbers in brackets. The present collection was made during the second week in September, and the temperature within the caves is given as 52° F. (or 11° C.).

Cavern.

Species found.

- | | |
|------------------------|---|
| 1. Jug Hole. | <i>Onychiurus fimetarius</i> L. (0).
<i>Heteromurus nitidus</i> Templ. (1). |
| 2. Bagshaw Cavern. | <i>Onychiurus ambulans</i> L. (0).
<i>O. fimetarius</i> L.
<i>Folsomia fimetaria</i> L. (0).
<i>Heteromurus nitidus</i> Templ. |
| 3. Blue John Cavern. | <i>Onychiurus fimetarius</i> L.
<i>O. ambulans</i> L.
<i>Anurida granaria</i> Nic. (0).
<i>Lepidocyrtus albus</i> Pack. (2). |
| 4. Treak Cliff Cavern. | <i>Onychiurus fimetarius</i> L.
<i>Folsomia fimetaria</i> L. |

Lt.-Col. Glennie notes that Collembola are especially plentiful in the Bagshaw Cavern, where specimens were obtained over a mile from the entrance, and in the Blue John Cavern. The surfaces of pools of water and puddles are good places to look for specimens, but as the species taken are not aquatic, this association is probably rather a matter of chance. In two Yorkshire caverns—Marble Steps and Sell Gill—no Collembola were found.

STONE AXES AND ARROW HEADS IN FOLKLORE

W. J. CLARKE, F.Z.S.

THE stone axes and arrow heads left by prehistoric man have long been a source of wonder to the countrymen of many nations who have turned up these objects and speculated upon their origin. As usual in such cases the supernatural has been invoked to explain what could not otherwise be accounted for.

The beliefs centred around them may be divided into two main groups—one which considered that they descend from the sky during thunderstorms, and are, in fact, 'thunderbolts'; while the other gives the Devil credit for manufacturing them and handing them over to elves and witches who 'shoot' them at those whom they wish to destroy. Hence the belief in sympathetic magic leads many people to carry these objects about, or to keep them in their homes to preserve them, and their possessions, from being struck by lightning, or the attacks of witches.

These superstitions have survived to within very recent times, and indeed are not yet altogether dead. So recently as 1915 the writer saw offered for sale in a Scarborough pawnbroker's shop a little bunch of amulets. On examination after purchase one of them proved to be a flint leaf-shaped arrow head enclosed in one of the cheap filigree brass heart-shaped cases which were commonly sold about that period, enclosing a block of compressed perfume. The perfume had been removed and the arrow head substituted, no doubt as an amulet against lightning, or against being 'elf shot.' Unfortunately, no details of its previous history could be obtained.

Some years ago the late Joshua Rowntree showed the writer a chain of flint arrow heads which he had acquired from a native of Langdale End, near Scarborough, who had collected them there, had them drilled and connected by silver links, and carried them to bring good luck.

Another specimen in the writer's collection is a very pretty little flint arrow head which was used in County Antrim, Ireland, in the year 1909 to cure cattle diseases. The cows were supposed to be suffering from 'grup,' whatever that may be, and the local wise-man was consulted. He duly arrived bringing with him several arrow heads. These he boiled in water which he gave to the cows to drink. Then, taking in one hand a cup of whisky, and in the other a piece of bread, he walked round the cattle chanting the couplet:

'I tak' ma bite, an' I tak' ma sup,
An' I cure the cows o' the rotten grup.'

Unfortunately, the result of the ceremony was not recorded.

In Northern Ireland neolithic axe and arrow heads have long been regarded as thunderbolts, and used as amulets against lightning. A small diorite celt measuring $2\frac{1}{2}$ in. in length but with a piece broken off the top, was kept on the rafters of a cottage in Antrim in 1887 as a protection against lightning. It is now in the writer's collection.

A stone axe composed of polished dark grey stone, measuring $4\frac{1}{2}$ in. in length, also in the writer's collection, was regarded as a thunderbolt and up to 1912 was kept on the rafters of a cottage at Portrush, Northern Ireland, to prevent the house being struck by lightning.

In Shetland stone axes are regarded as thunderbolts, as was recorded when Low made his tour through the islands in 1774. They were then, and still are, said to protect from lightning the houses in which they are kept.

This belief that these axes are thunderbolts persists almost throughout the world. In Sweden they are supposed to be a protection against lightning. In Germany a black wedge is believed to dart out of the thundercloud and to bury itself in the earth. Every time it thunders the wedge rises nearer the surface, and after seven years it may be found above ground. Any house in which it is preserved is believed to be proof against damage by lightning.

In Burma stone and also bronze axes are believed to be thunderbolts which, after they fall and penetrate the earth, take nine years to work their way to the surface.

In Italy flint arrow heads are kept by the peasantry to preserve their homes during thunderstorms, and they are carried on the person for the same reason. They believe that the lightning strikes with a similar stone. In certain districts they are known as 'St. Paolo's Tongue,' and when a countryman finds one he devoutly kneels down, picks it up with his own tongue and preserves it as a most potent amulet.¹

Two interesting specimens in the writer's collection come from West Africa. One of these, a long narrow implement of dark bluish stone measuring 5 in. in length by $1\frac{1}{8}$ in. across the sharp cutting edge which is its widest part, was collected in 1914 in the hut of a native of Togoland. Its use as an implement was not understood, but it was regarded as an amulet against lightning. The native name for it was 'sokpe'—'so,' the god of lightning, and 'kpe,' a stone.

The other is a rather roughly made axe of reddish stone, crudely ground to shape and measuring $3\frac{1}{4}$ in. in length, by $1\frac{1}{8}$ in. at its widest part, and $\frac{7}{8}$ at the narrowest part. This specimen came from Lagos in 1914; the natives did not know what it was and regarded it as a thunderbolt, keeping it in the hut as a protection against lightning.

The natives of the Gold Coast also regard arrow heads as

amulets, and it is interesting to note that in 1913, and possibly later, glass imitations were being made in London and sent out to West Africa for trade purposes.

The belief that prehistoric flint arrow heads have been used by the elves, fairies, or witches to shoot at human beings and cattle is more or less common throughout the civilised world.

In Derbyshire they are supposed to be fairy darts and to have been used to injure cattle. They are generally destroyed when found to prevent further mischief.

Country people in the North of England sometimes find difficulty in churning milk and this was supposed to arise from the cow having been struck by an elf stone while grazing in the field. However much the animal may be injured no wound is visible to the human eye until it has been rubbed with the bonnet of the Chief (if over the border) or by some very aged person. The wound, or its scar, if the mischief be of old date, will then be plainly visible. Popular belief maintained that the elves received these stones from fairies who wore them as breast pins at the fairy court.²

Irish peasants wear them about their necks, set in silver, as amulets against 'elf shooting.'

Mention of elf stones is made in the confession of Isabel Gowdie, one of the Auldern witches, who in April, 1662, was tried for witchcraft and afterwards executed. She declared that the elves formed them from the rough flint, the Devil himself perfecting them and delivering them to his witches: 'Each one of us so many. When he gives them to us he says, "Shoot this in my name, and they shall not go whole hame." And when we shoot the arrows we say:

"I shoot you man in the Devil's name,
He shall not win whole hame,
And this shall be also true,
There shall not be a bit of him on lieiw."

We have no bow to shoot with but "spang" them from the nail of our thumbs. Sometimes we miss, but if they touch, be it man, woman, or beast, it will kill.'

She gave the names of many people whom, she said, she and her comrades had slain with them, stating that whoever failed to bless himself when the little whirlwind passed which accompanied their passage through the air fell under their power.²

In 1590 occurred the trial of Katharine Ross, Lady Fowlis, who was accused of witchcraft and sorcery in attempting the destruction of some of her husband's relatives by causing clay images of them to be made and shooting at them with these elf arrows.¹

In Sutherlandshire these arrow heads were religiously

consigned to the nearest loch, or buried out of sight. So late as 1872 it was an article of faith in Scotland that 'elf bolts' when found should not be exposed to the sun or they were liable to be recovered by the fairies who would then work more mischief with them.

In County Derry an elaborate ritual was carried out to cure elf-shot cows. The elves are considered bad jealous sprites, who envy the peasants all their little comforts and especially their rough mountain cows with the milk and butter they yield. At dead of night, it is firmly believed, an elf will often enter the byre and shoot a small sharp stone under and behind the left shoulder of the cow. Next morning the owner finds her laid down, breathing heavily, with the sweat running down her eyes and nose from pain, and he knows she has been elf shot. So off he goes for the wise-man of the county who is skilled in healing cattle. The old man comes, clears the rooms, and makes his preparations. In a new clean pot he boils a pound of gunpowder and a crooked sixpence in a pint of water, and then carries the mixture to the byre and places it before the cow. She drinks it at once, when the gunpowder immediately blows the elf stone out again through the hole under the shoulder, and the sixpence covers the wound made by the stone. The doctor returns into the house with the stone in his hand to be praised and well paid. If after this treatment for elf shooting the cow *will* die, she does so because God chooses it, and not from the elf shot.²

In the Highlands of Scotland it was formerly a common practice, which has not yet altogether died out, to tie a piece of red worsted (the magic colour) round the tails of cows previous to turning them out to grass for the first time in the spring. This secured the cattle from the Evil Eye, or from being elf shot by fairies.

Large perforated stone hammers were popularly known in Scotland as "Purgatory Hammers" for the dead to knock with at the gates of Purgatory.

In Japan flint arrow heads are supposed to be shot by armies of spirits which are passing over the district.

A small white quartz arrow head, collected in Brittany in 1912, was carried as an amulet to bring good luck.

Three small arrow heads of Cornelian have been perforated for suspension from a cord round the neck, and were carried as a cure for skin diseases. In this case it is the material of which they are composed which does the work. These were collected in Arabia in 1914, and like the previous specimen, are in the writer's collection.

The belief in the supernatural nature of these stone implements has persisted in many parts of the world for a very long period. Marbodius, Bishop of Rennes, makes mention of

them in the eleventh century, and in spite of modern enlightenment, we are to-day little further advanced from the practise of these superstitious rites. The attitude of to-day seems to be that while we don't admit we believe such things, it is just as well to carry them so as to be on the safe side. And to-day, ridiculous as it may seem, the use of such amulets is much more common than most people suppose.

REFERENCES :

¹ *Scottish Charms and Amulet* by Geo. F. Black, 1893.

² *Folklore of the Northern Counties of England* by Henderson, 1866.

RECORDS

SPARASSIS CRISPA

A SPECIMEN of the above, sometimes called the Cauliflower Fungus, was sent to the Philosophical Society's Museum at York and was exhibited there for about three weeks. It was sent by Miss E. Fitzwilliam of Slingsby Hall and was collected under a group of Scots Fir on Scackleton Moor, Wigganthorpe, V.C. 62. Many years ago a specimen was found within a few yards of the same spot and was identified at Kew. The only other record appears to be from V.C. 63.—W. G. BRAMLEY.

AN OLD GORMIRE RECORD

GOING through old letters by me, mainly to destroy, I find this paragraph in one dated May 4th, 1895, from York

'Our [Bootham School] N.H. Club had a most delightful excursion to Gormire, above Thirsk, on Wednesday. The boys found a good deal. I had the good fortune to add moonwort to the flora of the district and the montane, Veronica, as well. Allan B. Hall, of Thirsk, went with us and took us to a boulder, which I found was Shap granite. It came [if I remember right, just below Gormire] from some 400 ft. above the sea, so that our York glaciers must have had that thickness at least.'

Most likely the above does not contain facts not already recorded, but I send in case it is not so.—J. EDMUND CLARK, Portway, Street, Somerset.

MOLLUSCS FROM THE HOLE OF HORCUM

MR. C. F. SWEETMAN, of York, has sent to me his list of Molluscs taken between April 4th-7th, 1938, in the Hole of Horcum, the four days' intensive search yielding splendid results. It should be noted that owing to the winds which prevail there and which make collecting very difficult, the result is particularly good.

Mr. Sweetman had all his captures verified by Mr. A. Smith, of York, and the *Pisidia* by Mr. Chas. Oldham, who remarked, "*P. cinereum* Alder. and *P. personatum* Malm are often associated in places such as you describe." "They are to be taken with a scoop in the springs throughout the length of the watercourse, from source to entry in the Beck."

Limax maximus L. One specimen.

Agriolimax agrestis L. Fairly common under stones.

Arion ater L. Common.

Vitrina pellucida Müll. One dead shell.

Vitrea chrystallina Müll. Common.

V. cellaria Müll. One dead shell.

V. alliaria Müll. Several, animal usually light in colour.

V. puma Alder. Fairly common in damp places.

V. nitidula Drap. One specimen.

V. radiatula Alder. Several in damp places.

Zonitoides nitidus Müll. Several.

Z. excavatus Bean. Four fine specimens, all from one place, animal almost black all over.

Euconulus fulvus Müll. Common.

Punctum pygmæum Drap. One specimen.

Pyramidula rotundata Müll. Fairly common in suitable places.

Hygromia hispida L. One specimen.

Acanthinula aculeata Müll. One specimen.

Helix hortensis v. *lutea* Moq.-Tan. One dead specimen.

Cochlicopa lubrica Müll. A few.

Jaminea anglica Fér. Two specimens.

Clausilia laminata Montagu. Two broken dead shells.

Carychium minimum Müll. A few.

Ancylus fluviatilis Müll. Two on stones in Beck.

Limnæa truncatula Müll. A few.

Pisidium cinereum Alder and *P. personatum* Malm. In springs throughout the Hole of Horcum watercourse.

ELSIE M. MOREHOUSE.

THE IDEAL CURATOR

In *The Naturalist* for July, 1915, page 215, the following paragraph, taken from the daily press at the time, appears:

'In George IV's wardrobe were found many things that could not be offered for sale—countless bundles of women's love letters, women's gloves, and locks of women's hair. These were destroyed. And five hundred pocket-books came to light, all containing sums of money; £10,000 in all was thus collected. For the King was a great hoarder and yet systematic in his hoarding. He carried the catalogue of his wardrobe in his head, and could, it is said, call for anything at any moment. He would have made an ideal curator of a Museum.'

The views seem to have changed, and Dr. R. E. Mortimer Wheeler, M.C., M.A., F.S.A., in his recent Presidential Address to the Museums Association at Belfast, printed in the *Museums Journal* for August states that: 'Since its beginning, now close on half a century ago, the Museums Association has cherished amongst its ideals the perfection of the curator himself and the just glorification of his craft. What sort of demi-god the perfect curator would be, I hesitate to conjecture: perhaps a sort of mixture of Clio, St. Peter, and Mr. Sheppard!'

A MORCHELLOID CORTINARIUS

A. E. PECK

THE Annual Fungus Foray of the Whitby Naturalists' Club for 1938 was held on October 1st, and was attended by over fifty persons. Skelder Wood provided the hunting ground, and the writer, an Honorary Member of the Club, acted as leader. Specimens were plentiful, and, after tea, they were spread out on a couple of tables out-of-doors for description by the leader.

Two similar specimens puzzled me. These had substantial plain stems 4 or 5 inches in length, with wrinkled and pitted caps, lilac or violaceous in colour, and one's mind was at once carried to the Ascomycetal genera *Morchella* and *Gyromitra*. A search in Massee's fourth volume did not reveal anything helpful for determination, and the microscope did not reveal any Asci.

I sent the specimens to Miss E. M. Wakefield, of Kew Herbarium, and she replied :—' The two specimens you send are examples of a " Morcheloid " abnormality which is not uncommon in certain Agarics, notably in *Laccaria laccata* and *Collybia velutipes*. If you have Buller's *Researches on Fungi*, and look in Vol. III, page 472, you will find a photograph of this phenomenon in *Collybia velutipes*. In your case the species is a *Cortinarius* which has developed this growth—perhaps *C. torvus*, but of course it is almost impossible to be certain as to the species. If you had cut down through the pileus, you would have seen the gills on the under surface.'

Fortunately I possess Professor Buller's work (a highly prized presentation copy from the author), and an examination of the citation proved interesting and helpful, as I cannot recall any reference to this abnormality at any of the numerous Forays which I have attended.

This mention of *Cortinarius* by Miss Wakefield at once took my mind to *Cortinarius* (*Myx*) *elatior*, of which normal specimens were gathered in the same area, and which species is characterised by the violaceous or lilac colour in both cap and stem. However, Miss Wakefield mentions certain characters present and lacking in our specimens which do not fit with typical *C. elatior*, and thinks that it is better to call the record ' a species of *Cortinarius*, morcheloid form,' with which suggestion I agree, though I confess to a leaning towards *C. elatior*, perhaps being influenced somewhat by the following anecdote, which may be worth placing on record as it illustrates the difficulties which sometimes confront Mycologists.

At a certain Fungus Foray of the Yorkshire Naturalists' Union at Mulgrave Woods, I had brought in four specimens of

a species, and in accordance with custom, had deposited them to be named by George Massee and Alfred Clarke. On the following day I found that these veteran Mycologists had been 'struggling' with these specimens for a long time, and had decided that they belonged to the genus *Hebeloma* and were of a species 'new to science.' T. B. Roe, who was present, queried 'Why not a *Cortinarius*?' and I immediately added 'And why not *elatior*?'—a suggestion which finally proved acceptable. I was probably more familiar with this particular species than were the more experienced Mycologists named, since it is one which I have very frequently encountered, and particularly because the presence of the violaceous or lilac colour is such a useful distinguishing feature.

CORRESPONDENCE

REIGHTON,

Near FILEY,

October 15th, 1938.

To the Editors of *The Naturalist*.

DEAR SIRS,

There has of late years, and particularly, I think, this last season, been a marked increase in the number of rabbits. This may possibly be attributed in part to the high rate of agricultural wages, which, meaning on most farms, fewer hands, leaves the farmer less leisure, while the labourer himself no longer bothers (legitimately or illegitimately) to snare rabbits to help out the commissariat. Whatever the reason, the fact remains that in many districts they are sadly too plentiful, and, unless, as has sometimes happened, disease steps in to stem the increase, rabbits are likely to become a serious problem. To the country-dweller whose garden is surrounded by agricultural land they are already an unmitigated nuisance, for not only do they go for his greens, and, even worse, nibble off the tops of his choicest carnations and devour wallflowers, etc., wholesale, but they dig little holes in his flower-beds, apparently for the sheer joy of the thing. The other morning I counted no fewer than ten of these 'scratches' in one rose-bed.

And this brings me to a point I have never seen or heard mentioned. In practically every case, on top of the little heap of soil thus excavated there are one or two droppings. Can this be a way of notifying the animal's presence to others of the tribe—as is supposed to be the origin of certain canine practices? I should be interested to know if others have noticed this.

Yours faithfully,

T. HYDE-PARKER.

The Entomologist for October contains 'Further Notes on *Danaus plexippus* L. in the British Isles,' by C. Nicholson; '*Mniophaga*: a New Genus of Gelechiadæ, with reinstatement of *portlandicella* Rich. as a Species,' by F. N. Pierce and H. W. Daltry; 'Microlepidoptera from Ireland,' by B. P. Beirne; 'On the Types of *Adelpha* (Lep. Nymphalidæ) in the Collection of the British Museum,' by A. Hall; and numerous notes and observations.

THE TRICHOPTERA OR CADDIS-FLIES OF YORKSHIRE

JAMES M. BROWN, B.Sc., F.R.E.S. AND H. WHITEHEAD, B.Sc.

(Continued from 285).

Family—HYDROPSYCHIDAE

Hydropsyche pellucidula Curt.

V.C. 62. Glaisdale, 4-10/6/09 (G.T.P.). Helwath Beck, 6/6/37 (H.B.).

V.C. 64. Malham, 2/7/35, Winterburn, 1/5/32 (J.M.B.).

V.C. 65. Semerdale, 9/35 (J.M.B.).

Hydropsyche instabilis Curt.

V.C. 62. Kildale (G.T.P. Coll., 4-11/8/13). Hole of Horcum, 27/6/37 (H.B.).

V.C. 63. Huddersfield, Grimescar (G.T.P. Coll., 11/7/89), Harden Clough (G.T.P. Coll., 24/8/01). Keighley, 30/6/34, 9/8/31 (J.W.).

V.C. 64. Malham, 25/7/35, 2/7/35 (J.M.B.).

H. angustipennis Curt.

V.C. 62. R. Foss, York, 10/6/33 (J.R.D.).

V.C. 63. Huddersfield, Dogley (G.T.P. Coll., 29/7/89), Kirkheaton (G.T.P. Coll., 1/6/89). Keighley, 17/8/33, 15/6/34 (J.W.). Smeaton, nr. Doncaster, 31/7/37 (J.M.B.).

V.C. 64. Hambleton, Selby (G.T.P. Coll., 14/8/97). Blubberhouses, 10/7/37 (H.W.). Winterburn, 1/8/32 (J.M.B.). Ripley, 5/25 (H.W.).

V.C. 65. Tanfield, 15/6/12 (G.T.P.).

H. lepida Pict.

V.C. 64. Gisburn, 28/7/33 (W.G.B.).

V.C. 65. Masham (G.T.P. Coll., 5/8/01).

Diplectrona felix McL.

V.C. 62. Scarborough, McL. (G.T.P. *Vict. Hist.*).

V.C. 63. Keighley, 23/6/34, 19/7/34 (J.W.).

V.C. 65. Hebblethwaite Ghyll, Sedbergh, 31/7/27 (E.P.).

Family—PSYCHOMYIDAE

Tinodes wæneri L.

V.C. 61. Driffield, 8/29 (J.M.B.).

V.C. 62. Castle Howard (G.T.P. Coll., -/90, G.C.D.). Scalby Beck (G.T.P. Coll., 6-14/9/96).

V.C. 63. Walton Hall Wood, Wakefield (G.T.P. Coll., 12/6/20). Shipley Glen, 12/8/33, Keighley, 19/6/33 (J.W.). Smeaton, 31/7/37 (J.M.B.).

V.C. 64. Bishopthorpe, Rev. L. W. Grensted (*E.M.M.*, 1934, p. 66). Grassington (G.T.P. Coll., 12-16/6/00), 17/8/32 (J.M.B.). Burnsall, 6-7/31, Gisburn, 1/8/32, 6/7/31 (W.G.B.). Hebden, 21/6/30 (H.W.). Malham Tarn, 3/8/25 (E.P.). Austwick, Fen Beck, 2/8/25, The Pant, 11/7/27 (H.W.). Clapham, 30/8/20 (W.J.F.). Malham, 3/7/32, 2/7/35, Winterburn, 8/32, Horton-in-Ribblesdale, 8/34, Ripon, 8/33 (J.M.B.).

V.C. 65. Masham (G.T.P. Coll., 5/8/01). Semerdale, 9/35 (J.M.B.).

T. aureola Zett.

V.C. 62. Hayburn Wyke (G.T.P. Coll., 12/8/02). Ravenscar, 5/7/37 (J.M.B.).

V.C. 63. Pennyspring Wood, Huddersfield (G.T.P. Coll., 7/7/20).

T. unicolor Pict.

V.C. 64. R. Ribble, Wheatley, 23/7/30, Gisburn, 23/7/32, 1/8/32 (W.G.B.).

T. dives Pict.

- V.C. 62. Hole of Horcum, 26/7/37 (H.B.). Maw Wyke, 5/7/38 (J.M.B.).
 V.C. 63. Keighley, -/18 (R.B.) (G.T.P. in *E.M.M.*, 1919, p. 69).
 V.C. 64. Grassington (G.T.P. Coll., 13/6/91), 20/6/96 (G.T.P.).
 Malham (G.T.P. Coll., 4/6/10), 3/7/34, 3/7/32, 25/7/35 (J.M.B.). Goredale and Malham, 13/6/25 (E.P.).
 Wheatley, 23/7/30, Gisburn, 11/6/32, 23/7/32 (W.G.B.).
 Austwick Beck, 7/24, 6/25, Norber Syke, 6/25, Clapdale Beck, Clapham Cave, 22/6/25 (H.W.). Bolton Abbey, 10/7/32 (M.E.M.).

Lype phæopa Steph.

- V.C. 62. Castle Howard (G.T.P. Coll., 22-27/6/96).
 V.C. 64. Gargrave, 6/6/25 (H.W.).

Metalype fragilis Pict.

- V.C. 64. Malham, 25/7/35 (J.M.B.) (*E.M.M.*, 1938, p. 135).

Psychomyia pusilla Fabr.

- V.C. 62. Hovingham, 5/8/35, Helmsley, 3/9/35 (J.M.B.).
 V.C. 64. Burnsall, 6-7/31, Gisburn, 23/7/31, 1/8/32 (W.G.B.).
 Ilkley, 22/8/24 (H.W.). Winterburn, 1/8/32, Grassington, 30/8/34 (J.M.B.). Harewood Br., 18/7/25 (E.P.).
 V.C. 65. Masham (G.T.P. Coll., 5/8/01). Semerdale, 27/7/35 (J.M.B.).

Family—POLYCENTROPIDÆ

Neureclipsis bimaculata L.

- V.C. 64. Ingleton (G.T.P. Coll., 7/8/11).
 V.C. 65. Masham (G.T.P. Coll., 5/8/01).

Plectrocnemia conspersa Curt.

- V.C. 62. Castle Howard (G.T.P. *Vict. Hist.*).
 V.C. 63. Huddersfield, Dunford Bridge, 9/7/92 (G.T.P.), Grimescar (G.T.P. Coll., 21/6/88), Pennyspring Wood (G.T.P. Coll., 17/9/19), Crosland Hall (G.T.P. Coll., -/95, -/97), Meltham Mills Res. (G.T.P. Coll., 12/8/96, 6/00), Skelmanthorpe (G.T.P. Coll., 9/98, -/99, -/01, B.M.). Hebden Bridge (G.T.P. Coll., 7/04). Strines, nr. Sheffield, -/08 (G.T.P.). Keighley, Wilsden, 27/6/31, Shipley Glen, 27/6/31 (J.W.).
 V.C. 64. Thorner Beck, 19/6/25 (E.P.). Burnsall, 23/6/29 (W.G.B.). Ripon, 8/33 (J.M.B.). Adel, Leeds (W.D.H.).

P. geniculata McL.

- V.C. 62. Ramsdale, Robin Hood's Bay, 14/6/37 (J.M.B.).
 V.C. 63. Harden Moor, 9/6/34 (J.W.).
 V.C. 64. Grassington, 28/6/29 (W.G.B.).

Polycentropus flavomaculatus Pict.

- V.C. 61. Driffield, 14/9/30 (H.W.).
 V.C. 62. Castle Howard (G.T.P. Coll., 22-27/6/96, 10/6/97).
 Scarborough (G.T.P. Coll., 1-13/8/02). Great Ayton (G.T.P. Coll., 2-4/8/13). Glaisdale, 4/6/09 (G.T.P.).
 Hovingham, 5/8/35 (J.M.B.).
 V.C. 63. Keighley, 11/7/36, 12/6/34, 21/8/33 (J.W.). Hebden Bridge, 1/6/04 (G.T.P.). Wyming Brook, Sheffield, 25/8/37 (J.M.B.).
 V.C. 64. Boston Spa (F.G.B.). Buckden, 8/04 (G.T.P.). Gisburn, 11/6/31, 23/7/32, 1/8/32, Burnsall, 5-7/31 (W.G.B.).
 Collingham, 9/6/25, Bell Busk, 13/6/25 (E.P.).
 Grassington (G.T.P. Coll., 13/6/91, 12-16/6/00).
 Meanwood Beck, Leeds, 1/9/24, 30/6/25, Harden

Bridge, Austwick, 22/6/25, Nr. Clapham Cave, 22/6/25 (H.W.). Malham, 7/35, Goredale, 7/35, Ripon, 8/33, Horton-in-Ribblesdale, 8/32, Winterburn, 8/32 (J.M.B.).

V.C. 65. Barnard Castle (G.T.P. Coll., 16/6/92, A.E.H.). Dent, 6/6/33, Semerdale, 7/34 (J.M.B.).

Polycentropus multiguttatus Curt.

V.C. 63. Hardcastle Crags, nr. Hebden Bridge (G.T.P. Coll., 11/6/04).

V.C. 64. R. Wharfe, nr. Tadcaster (G.T.P. Coll., 10/6/98). Ripon, 8/33 (J.M.B.).

V.C. 65. Semerdale, 9/35 (J.M.B.).

P. kingi McL.

V.C. 64. R. Ribble, Wheatley, 23/6/32, Gisburn, 23/7/32 (W.G.B.).

Holocentropus dubius Ramb.

V.C. 64. Chandler's Whin, Askham Bog (G.T.P. Coll., 31/5/90).

H. picicornis Steph.

V.C. 61. Kilnwick Percy, 3/8/36 (J.M.B.).

V.C. 63. Huddersfield, Almondbury (G.T.P. Coll., 15/6/89).

V.C. 64. Stutton, -/80 (G.T.B.). Askham Bog (G.T.P. Coll., 4/6/00), 21/5/34 (J.W.).

Cynurus trimaculatus Curt.

V.C. 62. Castle Howard (G.T.P. Coll., 22-27/6/96).

V.C. 63. Huddersfield, Greenfield (G.T.P. Coll., -/89, S.L.M.), Sheard's Dam, Kirkheaton (G.T.P. Coll., 4/8/90), Meltham Mill Res. (G.T.P. Coll., 12/8/96). Shipley Glen, 16/6/34, Keighley, 15/6/34 (J.W.).

V.C. 64. Bishopthorpe (L.W.G.) (*E.M.M.*, 1934, p. 66). Burnsall, 6-7/31, Gisburn, 1/8/32 (W.G.B.). Malham, 2/7/35 (J.M.B.). Fen Beck, Austwick, 3/8/25 (H.W.).

V.C. 65. Semerdale, 27/7/35 (J.M.B.).

C. flavidus McL.

V.C. 63. Harden Clough, Kelbrook, 22/8/29 (W.G.B.).

Ecnomus tenellus Ramb.

V.C. 64. R. Wharfe, Hebden, 22/6/30 (W.G.B.).

Family—PHILOPOTAMIDAE

Philopotamus montanus Don.

V.C. 62. Kettleless, 9/26, 10/8/28 (H.W.).

V.C. 63. Huddersfield, Harden Clough (G.T.P. Coll., 1-3/8/01), dark form abundant. Keighley, 5/34, 24/3/35 (J.W.).

V.C. 64. Halton Ghyll, Littondale, 3/4/26 (1,800 ft.), Swarth Ghyll, Oughtershaw, 25/7/25 (E.P.). Ingleboro' (G.T.P. *Vict. Hist.*). Austwick Beck, 7/27, Blubberhouses, 10/7/37 (H.W.). Bolton Abbey, 10-17/6/32 (M.E.M.). Drebley, 29/3/29 (W.G.B.). Penyghent, 8/32, Malham, 3/7/35, Goredale, 7/35 (J.M.B.).

V.C. 65. Sedbergh, 18/5/32, Dent, 6/6/33 (J.M.B.).

Wormaldia occipitalis Pict.

V.C. 62. Hayburn Wyke (G.T.P. *Vict. Hist.*), Hole of Horcum, 31/8/37, Sleights, 29/9/37 (H.B.). Robin Hood's Bay, 16/9/36, 3/10/37, Ravenscar, 9/10/37, Mulgrave Woods, 12/9/36 (J.M.B.).

V.C. 63. Huddersfield, Pennyspring Wood, (G.T.P. Coll., 26/6/87, 3/8/87), Crosland Hall (G.T.P. Coll., 7-8/99), Skelmanthorpe (G.T.P. Coll., -/98-99, B.M.). Keighley, 15/9/32 (J.W.). Ecclesall Wood, Sheffield, 2/9/36, 17/7/37 (J.M.B.).

- V.C. 64. Wheatley, 23/7/32, Gisburn, 23/7/32, 1/8/32, 25/9/32, 30/9/33 (W.G.B.). Norber Syke, Austwick, 6/25, The Hollies, Leeds, 11/7/24 (H.W.).
- V.C. 65. Dent, 3/6/33 (J.M.B.).
- Wormaldia subnigra* McL.
- V.C. 62. Scarborough (G.T.P. *Vict. Hist.*). Helmsley, 3/8/35, Mulgrave Woods, 12/9/36 (J.M.B.).
- V.C. 63. Pennyspring Wood, Huddersfield (G.T.P. Coll., 10/8/97).
- V.C. 64. Harewood Br., 18/7/25 (E.P.).
- V.C. 65. Semerdale, 9/35 (J.M.B.).
- Chimarra marginata* L.
- V.C. 64. R. Wharfe, Hebden, 22/6/29 (W.G.B.).

Family—RHYACOPHILIDAE

Rhyacophila dorsalis Curt.

- V.C. 61. Driffield, 12/10/30 (H.W.). Bubwith (W.J.F.).
- V.C. 62. Castle Howard (G.T.P. Coll., 13/6/96, 10/6/97). Scalby Beck, Scarborough (G.T.P. Coll., 10-14/9/96), 22/6/01 (G.T.P.), Glaisdale, 4/6/09 (G.T.P.). Kettleiness, 10/8/28 (H.W.). Arncliffe Woods, 17/9/36, Beck Hole, 17/9/36, Robin Hood's Bay, 24/7/36, 28/9/37, 2/5/38 (J.M.B.).
- V.C. 63. Huddersfield, Lepton Wood (G.T.P. Coll., 28/6/21), Royd Edge, Meltham (G.T.P. Coll., 26/7/10), Grimescar (G.T.P. Coll., 5/6/88, 11/7/89), Meltham Mills (G.T.P. Coll., -/98), Gunthwaite (G.T.P. Coll., -/98, B.M.). Hebden Bridge, 11/6/04 (G.T.P.). Wharnccliffe Woods (G.T.P.). Wyming Brook, Sheffield, 22/9/37 (J.M.B.).
- V.C. 64. Meanwood Beck, Leeds, 1/9/24, Gargrave, 6/6/25, Skipton, 16/5/25, Bell Busk, 13/6/25, Grassington, 16/9/24, Ilkley, 23/9/26 (H.W.). Harewood Bridge, 12/9/25, Collingham, 9/6/25 (E.P.). Hebden, 11/8/31, Gisburn, 30/9/31 (W.G.B.). Ellerbeck, Skipton, 10/6/26 (E.P.). Grassington, 20/6/91 (G.T.P.), 8/9/33 (J.M.B.). Arncliffe Woods, 8/07, Malham, 3/7/32, Horton-in-Ribblesdale, 7/34 (J.M.B.). Tadcaster, -/97 (F.G.B.).
- V.C. 65. Aysgarth, 26/6/31 (H.W.). Dent, 6/33, Semerdale, 6/34 (J.M.B.).

R. septentrionis McL.

- V.C. 64. R. Ribble, Gisburn, 8/31, 25/9/32 (W.G.B.).

R. obliterated McL.

- V.C. 62. Scarborough McL. (G.T.P. *Vict. Hist.*). Goathland, 30/9/37, Sleights, 2/10/37 (H.B.). Helmsley, 3/9/35, Beck Hole, 17/9/36, Arncliffe Woods, 17/9/36, Robin Hood's Bay, 14/9/36, 1/10/37, Maw Wyke, 16/9/36 (J.M.B.).
- V.C. 63. Huddersfield, Gunthwaite (G.T.P. Coll., 9/98, B.M.), Denby Dale (G.T.P. Coll., 9/98, -/00, -/01, B.M.), Harden Moss (G.T.P. Coll., 9/9/11), Hebden Bridge (G.T.P. *Vict. Hist.*), Keighley, 9/34, Shipley Glen, 27/6/31 (J.W.). Ecclesall Wood, Sheffield, 13/10/34, 2/9/36, Wyming Brook, Sheffield, 14/9/37, 22/9/37 (J.M.B.).
- V.C. 64. Between Beckermonds and Buckden, 19/9/24 (H.W.). Wheatley, 15/10/32, Gisburn, 25/9/32 (W.G.B.).

R. munda McL.

- V.C. 62. Helwath Beck, 26/9/37 (H.B.).
- V.C. 64. Grassington (G.T.P. Coll., 10/9/04). Hebden and Drebley, 9/31 (W.G.B.).

Glossosoma vernale Pict.

V.C. 62. Helmsley, 3/9/35 (J.M.B.).

V.C. 64. Knaresborough (G.T.P. Coll., 13/4/16). Grassington (G.T.P. Coll., 12/6/00, 18/4/08), 21/4/25 (H.W.), 9/9/33 (J.M.B.), Arthington (G.T.P. Coll., 13/5/11). Bell Busk, 10/6/25, Ellerbeck, Skipton, 10/6/26, Beckermonds, 19/9/24, Ilkley, 22/8/24, Buckden, 20/9/25, Clapdale Beck, 22/6/25 (H.W.). Collingham, 9/6/25, 12/9/25, Harewood Bridge., 2/9/24 (E.P.). Bolton Abbey, 10-17/6/32 (M.E.M.). Wheatley, 25/9/32, Gisburn, 6/4/31 (W.G.B.). Hanlith, 6/9/33 (J.M.B.).

V.C. 65. Wensley Bridge, 24/5/31 (H.W.). Dent, 4/6/33, Semerdale, 9/35 (J.M.B.).

Glossosoma boltoni Curt.

V.C. 62. Ravenscar, 26/6/37 (J.M.B.).

V.C. 63. Keighley, 1/7/34 (J.W.).

V.C. 64. Malham, 2/7/35 (J.M.B.).

Agapetus fuscipes Curt.

V.C. 61. Driffeld, 31/8/30 (H.W.). Brough (G.T.P. Coll., 27/5/01). Millington, 1/8/36 (J.M.B.).

V.C. 62. Kettleless (H.W.). Hole of Horcum, 27/6/37, 31/8/37 (H.B.). Ravenscar, 26/6/37, Robin Hood's Bay, 25/6/37 (J.M.B.).

V.C. 63. Hampole, Doncaster, 9/7/08 (G.T.P.). Keighley, 31/5/36, 8/6/35, 4/7/33 (J.W.). Ecclesall Woods, Sheffield 6/6/37 (J.M.B.).

V.C. 64. Wedber Wood, Malham, 1/8/25, Bell Busk, 13/6/25, Harewood Bridge, 12/9/25, Dibb Scar, Grassington, 28/6/27, Ripley, 19/7/25 (E.P.). Collingham, 12/9/25, Fen Beck, Austwick, 2/8/25, Austwick Bk. Hd., 28/6/25, The Hollies, Leeds, 11/7/24 (H.W.). Malham, 2/7/35, Ripon, 8/33, Winterburn, 8/9/33, Grassington, 2/8/32 (J.M.B.).

V.C. 65. Dent, 6/33 (J.M.B.).

A. comatus Pict.

V.C. 64. Grassington (G.T.P. Coll., 12-16/6/00). Ripley, 16/6/25 (E.P.). Malham (G.T.P. Coll., 4/6/10). Bolton Abbey, 10-17/6/32 (M.E.M.). Burnsall, 6-7/31, Gisburn, 7/8/33 (W.G.B.). Tadcaster, -/97 (F.G.B.). Grassington, 25/9/34 (J.M.B.).

Family—HYDROPTILIDAE

Allotrichia pallicornis Etn.

V.C. 64. Malham, 25/7/35 (J.M.B.).

Hydroptila forcipata Etn.

V.C. 64. Collingham, 9/6/25, Harewood Bridge, 30/6/27, Poole Bridge, 20/7/27 (E.P.). Burnsall, 5-7/31 (W.G.B.). Gargrave, 6/6/25 (E.P.). Winterburn, 8/32, Malham, 25/7/35 (J.M.B.).

H. femoralis Etn.

V.C. 64. Bell Busk, 10/6/25 (E.P.).

H. maclachlani Klp.

V.C. 62. Robin Hood's Bay, 5/10/37 (J.M.B.).

V.C. 64. Gisburn, 30/9/33 (W.G.B.). R. Skell, Ripon, 6/7/34 (J.W.).

Ithytrichia lamellaris Etn.

V.C. 64. R. Wharfe, Burnsall, 17/9/31 (W.G.B.). R. Aire, Malham, 25/7/35 (J.M.B.).

Oxyethira costalis Curt.

V.C. 65. Semerdale, 9/35 (J.M.B.).

YORKSHIRE NATURALISTS' UNION: VERTEBRATE ZOOLOGY SECTION

E. WILFRED TAYLOR

A MEETING of the Vertebrate Section of the Yorkshire Naturalists' Union was held in the library of the Church Institute, Leeds, on Saturday, October 15th, Mr. C. W. Mason occupying the chair.

The Sectional Meeting was preceded by meetings of the Yorkshire Wild Birds and Eggs Protection Acts Committee and of the Yorkshire Mammals, Reptiles, Amphibians, and Fishes Committee.

At the Sectional Meeting the Minutes of the previous meeting were read and approved, as also were the annual reports of the Divisional Officers of the North, East, and West Ridings and of the York District. The Divisional Officers were Messrs. W. J. Clarke, C. W. Mason, H. B. Booth, and S. H. Smith.

The General and Financial Reports of the Yorkshire Wild Birds and Eggs Protection Acts Committee and of the Yorkshire Mammals, Amphibians, Reptiles, and Fishes Committee were read and approved.

The name of Mr. R. Chislett was put forward by the Section as nominee for the office of President of the Union for 1939.

Mr. E. Wilfred Taylor was elected President of the section for 1939 and Mr. Rex Procter was appointed Honorary Secretary.

The retiring President, Mr. C. W. Mason, referred to the loss sustained by the section through the death of Mr. Jasper Atkinson, and extended to his relations the sympathy of those present.

Miss E. Gallwey gave a paper on the 'Adder' and referred to the two types, α and β , commonly found in this country, and to a melanic form in which the black diamond shaped markings have expanded and covered the body. The Adder was described as stout in build and ranging in length from 18 to 22½ inches in adult specimens, though occasionally a length of 28 inches is attained. Unlike the Grass Snake the pupil of the eye is elliptical and the reptile is nocturnal in its habits. Although not so fond of water as the Grass Snake the Adder is an accomplished swimmer and has been seen swimming strongly half way across an arm of the sea five miles in width.

The skin is shed every other month during the period of activity and the young slough soon after birth. When born they measure 6 to 6½ inches in length, and when one day old will hiss when disturbed; at two days venom is secreted and the bite is dangerous. The young have a way of hiding under the mother when suddenly disturbed and the lecturer thought that this habit had given rise to the myth of the Adder swallowing its young.

A series of slides illustrated the arrangement of the overlapping under plates and the method of their connection to the ribs, which enables the snake to move forward in the well-known sinuous manner. Attention was also drawn to the right-handed development of the internal organs, particularly the lungs. The mechanism controlling the erection of the fangs, which latter are attached to the maxillary process, was explained, and also the method by which broken fangs are replaced. The lecturer thought it most probable that they were replaced at regular intervals, even when accidental damage had not been sustained.

It was explained that the venom of the Adder acts in three distinct ways: It causes coagulation and breaking down of the blood corpuscles, affects the capillaries so that blood escapes through the mucous membrane, and paralyses the nerve centres. Out of four cases of Adder bite known to the lecturer two had died, and out of 13 recorded cases six had succumbed.

It was pointed out that creatures with toxic blood, such as the hedgehog and Grass Snake, are little affected by Adder venom. The food consists largely of mice and voles with occasional young birds. Full-grown rats have been known to be swallowed.

The lecturer referred to a docile pet Adder called Victoria that she kept for nine months and handled with impunity, although the fangs were not extracted. This reptile shared hearth and home and was evidently much beloved.

The lecture was well illustrated, and dealt with every aspect of the subject.

Mr. A. Gilpin showed a series of hand-coloured slides of the Tree Creeper, Tree and Meadow Pipit, Willow Warbler, Heron, and Ringed Plover.

Mr. G. R. Edwards gave a paper entitled 'With Temminck's Stint in Scotland,' supported by Messrs. V. S. Crapnell and R. Chislett.

The lecturer described a visit to the Cairngorm district of Scotland armed with a cinema camera, and literally conducted his audience along a mountain trail into the heart of this wild and majestic region. Beautiful panoramic views, taken en route, showed the fretted skyline, the deep snow in the corries, the sheer precipices, and the softer scenery of loch and burn.

The object of the visit was to photograph the fauna of this region and series were obtained of the Crossbill, Lapwing, and the Red Squirrel.

On arriving at a lochan on June 13th 1934, a search was made for nests and a bird was flushed from what was at first thought to be a Dunlin's nest containing four eggs. The lecturer felt uncertain, as the flight and appearance were peculiar, but unfortunately the next few days were very stormy and the nest was flooded and deserted. The eggs were sent to the British Museum where Dr. P. R. Lowe gave his opinion that they were from the nest of Temminck's Stint, a species not previously known to have nested in Great Britain. A second visit was paid about a month later but the birds were not seen.

A year passed, and in 1935 a pair of birds were seen in the same locality and thought to belong to this species, but no nest was found though excellent series were obtained of the Crested Titmouse, Dunlin, Sandpiper, Coal Tit, Tree Creeper, Oyster Catcher, Woodcock, and Golden Plover.

A final visit was paid in 1936 when Mr. Edwards was so fortunate as to find a second nest containing four eggs. On the following day one egg was found with a hole in it some distance from the nest, but the bird continued to incubate the remaining three. Both Mr. Edwards and Mr. Crapnell occupied the hide that was erected and both obtained an excellent series of moving pictures of the sitting bird. At first she was much disturbed by the noise of the camera but she soon became used to this, though it proved a restless subject, for ever shuffling in the nest, pulling blades of grass, and generally re-arranging the surroundings. The male bird was not seen and the eggs turned out to be infertile.

Mr. R. Chislett made a special journey to the site and obtained some beautiful still photographs, both of the bird on the nest and feeding at the edge of the lochan. As he sat in the tent with the bird on the nest and Witherby's handbook on his knees he compared the sitting bird with the description point by point and found the agreement perfect.

Messrs. Edwards and Crapnell were congratulated on the good fortune that attended them, and in the good use they had made of such a singular and unique opportunity.

Finally, a vote of thanks to the lecturers and lanternists was proposed and carried unanimously.

PHALLUS IMPUDICUS : A QUERY

D. W. BEVAN

A FEW days ago (October) this Stinkhorn was observed in a wood near Scarborough, and, seated on it, thirty-one blue-bottle flies, all dead but two. On the surrounding low herbage, and roughly within a radius of ten to twelve inches, there were certainly over fifty of the same species of fly—all dead. They were all glued on by their feet. In the endeavour to pick one up by a wing the wing broke away. Mr. G. B. Walsh identifies the fly as *Caliphora vomitoria*.

The specimen, with adhering flies, was shown at the local field naturalists' meeting, where Mr. A. E. Peck, an expert mycologist, stated that the occurrence was new to him.

It is commonly understood that the attraction of this fungus for flies serves to disseminate the spores. How can this occur when the visitors are slain on the spot?

REVIEWS AND BOOK NOTICES

The Pageant of Wings, by Douglas Gordon, pp. viii + 304, with illustrations by R. E. St. Leger-Gordon. John Murray, 8/6. This new book by Mr. Gordon is, like his others, very pleasant reading. Whenever he writes about birds one recognises the keen and accurate observer. When Mr. Gordon theorises we do not feel quite so sure about him, but this must not be taken as adverse criticism. It is always useful to have the explanations and suggestions of other naturalists, and Mr. Gordon is so readable that we confidently recommend this book to all naturalists. The illustrations are the work of the author's wife, and are good.

Facing Mount Kenya, by Jomo Kenyatta, pp. xxvi + 339, with a map and 8 plates. Secker and Warburg, 12/6. This absorbing book will be read with interest, not only by ethnologists but by all thoughtful people who would like to know something of Native African opinion regarding such matters as land tenure, survival of tribal customs, marriage system, magic, religion, and so on. Mr. Kenyatta, who is a member of the Kikuyu tribe, has had the advantage of a liberal education, both at home and in Europe. He is thus a peculiarly appropriate spokesman for his people, and he is most convincing. While believing in progress he would have the African people develop on African lines. The introduction to the book is the work of Dr. Malinowski, who is Professor of Anthropology in the University of London. Among many significant comments made by Professor Malinowski the following may be quoted: 'The educated, intellectual minority of Africans, usually dismissed as "agitators," are rapidly becoming a force. They are catalysing an African public opinion even among the raw tribesmen. A great deal will depend on whether this minority of "agitators" will be made to keep a balanced and moderate view of economic, social, and political issues, or whether by ignoring them, and treating them with contempt, we drive them into the open arms of world-wide Bolshevism.'

THE VEGETATION OF YORKSHIRE AND SUPPLEMENT TO THE FLORAS OF THE COUNTY

(Continued from page 300)

Hieracium rubicundum Hanb.

Only recorded from Black Force, A. Wilson, 1892, *teste* A. Ley.

H. Sommerfeltii Lindeb.

Given by Linton as summit of Ingleborough, 1902. The var. *splendens* Hanb. was named for J. Cryer for a plant found between Threshfield and Kilnsey.

H. vagense Ley.

Yorks., very rare (Ley). Feizor Scar.

H. britannicum Hanb. (*H. caesium* var. *Smithii* Baker pro parte (Lint. Hier. '30').

Given for Yorkshire (Linton), and in Ley's list, Smearset and Feizor. Grassington, J.C. 1910 (Ley), Stanemoor and Sleightholme beck ! Kisdon force (Baker). Gayle beck plates, Jack wood, Penhill (Baker). I have had these growths referred to *H. decolor*.

var. *ovale* Ley (not typical) J. Cryer's gatherings, Ribbleshead, Malham, and Grassington, 1909, were referred by Ley to this.

H. Hypochæroides Gibs. (Gibsoni Backh).

A dominant species on calcareous scars throughout Craven, also in North Yorks.

var. *lancifolium* Linton. More on grassy limestone-soiled slopes, Crummock and Moughton, Ley list. Heseltine gill, Arncliffe, and Kettlewell, J. Cryer. Chapel-le-dale, Linton.

var. *saxorum* Hanb. A common growth in West Yorks. from Dentedale and Widdale, Ingleton, and Clapham, Gayle dale and Reeth; Bastow wood, Grassington, J.F.P. !

H. scoticum Hanb.

Langstrothdale, Deepdale, T. A. Cotton, 1892 ! A. Ley.

H. callistophyllum Hanb.

var. *cremnanthès* Hanb. 'Yorkshire' Bab. Man., 9th Ed.

H. sanguineum Ley.

West Yorks., Settle, and Ingleborough; Linton. Above High force, Clapham, Ingleborough, Ley list. Upper Wensleydale ! Cryer does not seem to have seen it in Upper Wharfedale but Ley's list gives Penyghent and J.F.P. got it near Arncliffe and Riddelsdell on rocks at Bolton Abbey in 1894.

Hieracium murorum Auct. angl. (*H. silvaticum* Gonan.).

General in Yorkshire in almost every river basin. var. *tricolor* W. R. Linton. Ley gives Chapel-le-dale, Clapham, Giggleswick, Arncliffe, and Kettlewell. Cryer adds Ribbleshead and Grassington. Bradley adds Malham *teste* E. R. Linton, var. *subcyaneum* W.R.L. West Yorks., the most frequent hawkweed on the limestone cliffs around Ingleborough and Wharfedale, Linton. Ley gives Cautley, Braidley Garth, Ingleton, Feizor, Moughton, Arncliffe, and Kettlewell. Cryer gathered it at Grassington and Skirethorns (Ley). var. *asymmetricum* Ley, Feizor, Smersett, Clapham, Ingleborough, Giggleswick, Arncliffe, Kettlewell, and Buckden. Ley's list and Cryer, Skirethorns and Grassington. var. *microcladium* Dahlstedt. In gills and on banks of the dales not on the scars (Ley). Ingleton glens, Dentedale, Ley list. Kisdon Force ! Mossdale ! Whitefell gill ! Sedbergh ! Some of Professor Oliver's Dentedale gatherings, W. R. Linton referred to var. *proliferum*.

var. *maculosum* Dahlst.

Twistleton Scar (Hanbury) Ingleton ! Attermire, Settle Scars which face south and west. Gordale, Malham, and Airtou. Mid Wensleydale from Preston Scars to Cotterdale ! var. *lucidulum* Ley. Linton records it for 'West Yorks' generally.

H. candelabræ W. R. Linton.

In Teesdale on Holwick scars and in Balderdale ! (Linton). Cliff gill, Buttertubs ! Ingleborough (Linton) and above Dale Beck, Ley list. Goredale ! and *hb.* Bradley.

H. integratum Dahlst. forma *varicolor* Lint. Hier.

Clapham and Chapel-le-dale west foot of Ingleborough. Dentedale abundant Ley, Oliver and Linton. Gunnerside—Ivelet gill !, Wharfe at Deepdale (Ley), Gayle beck, Aisgill !, Gordale, J.C. Kettlewell, J.C.

H. ciliatum Almq.

'West Yorks.' (Linton), Chapel-le-dale, Clapham and Ingleton Scars, Ley list. Coverdale head, W. R. Linton, Aysgarth force (Wheldon), *teste* A. Ley. Buckden, Cray gill ! Heseltine gill (Ley).

H. sarcophyllum Stenstr.

Wooded lime rocks, Langcliffe (Settle), Ley list, Malham J. Cryer. var. *ampliatum* W.R.L., Ingleborough Scars, Chapel-le-dale, Beezley, Ingleton (Hanbury and W. Whitwell), Dentedale, Linton, Heseltine gill, A. Ley., var.

var. *expallidiforme* Dahlst. Langcliffe, Catterick gorge, and Moughton, Ley list. Knaresbro' (J. G. Baker, No. 572 in Hb. Hand). Gordale, J.C. Cam gill, Langstrothdale, W. R. Linton. Arncliffe and Kettlewell, Ley List.

(To be continued)

A new work of prime importance to all interested in
Ornithology

A SPARROW-HAWK'S EYRIE

BY

W. W. NICHOLAS, F.R.P.S.

WITH FOREWORD BY

BRIAN VESEY-FITZGERALD, F.L.S., F.G.S.

NATURALIST EDITOR OF *THE FIELD*

xviii + 75 pages and 17 plates. Crown 4to.

cloth 7/6 net

This book, which is profusely illustrated from photographs taken by the author and his friend, forms the study of a Sparrow-hawk's eyrie from the hatching of the eggs to the flying of the young. In his foreword Mr. Vesey-Fitzgerald says :—" Mr. Nicholas has made a most careful study of the bird and he has in this book added very considerably to the sum total of our knowledge. And more knowledge of such birds as this very beautiful hawk is urgently needed."

Obtainable from all booksellers

A. BROWN & SONS, LIMITED

5 FARRINGDON AVENUE, LONDON, E.C.4

And at HULL

Issued bi-monthly, Illustrated with Plates and Text Figures.
To Subscribers, 12s. 6d. post free.

The Scottish Naturalist

With which is incorporated 'THE ANNALS OF SCOTTISH NATURAL HISTORY'

EDITED BY

A. C. STEPHEN, D.Sc., F.R.S.E.

Keeper, Natural History Department, Royal Scottish Museum.

AND

PERCY H. GRIMSHAW, I.S.O., F.R.S.E., F.R.E.S.

Formerly Keeper, Natural History Department, Royal Scottish Museum.

Assisted by:—Professor JAMES RITCHIE, M.A., D.Sc., F.R.S.E.; EVELYN V. BAXTER, F.Z.S., H.M.B.O.U.; LEONORA J. RINTOUL, F.Z.S., H.M.B.O.U.; H. S. GLADSTONE, M.A., F.R.S.E., F.Z.S.; C. H. O'DONOGHUE, D.Sc., F.R.S.E.; ANDERSON FERGUSON, F.R.E.S.; A. R. WATERSTON, B.Sc.

Subscriptions should be addressed to the Publishers,

Messrs. OLIVER & BOYD, LTD., Tweeddale Court, Edinburgh.

The Entomologist's Monthly Magazine

PRICE TWO SHILLINGS MONTHLY.

EDITED BY

K. G. BLAIR, B.Sc., F.R.E.S.

R. W. LLOYD, F.R.E.S.

H. G. CHAMPION, M.A., F.R.E.S.

F. LAING, M.A., B.Sc., F.R.E.S.

J. E. COLLIN, F.R.E.S.

H. SCOTT, M.A., Sc.D., F.L.S.

J. J. WALKER, M.A., R.N., F.L.S.

This Magazine, commenced in 1864, contains Standard Articles and Notes on all subjects connected with Entomology, and especially on the Insects of the British Isles.

Subscription—15/- per annum, post free, to—

**NATHANIEL LLOYD & CO., LTD., BURRELL STREET,
LONDON, S.E.1.**

COLLECTING APPARATUS.

Nets

Entomological Apparatus

Larva-Cages

Vivaria

Vascula

Plant-Presses, etc.

Pond-Nets

Collecting Tubes

Aquaria

Geologist's Apparatus

Dissecting Instruments

Microscopes, etc.

All requisities for indoor or outdoor work in every branch of
Natural History.

FLATTERS & GARNETT, LTD.,

309 OXFORD ROAD, MANCHESTER.

WATKINS & DONCASTER

NATURALISTS,

36, STRAND, LONDON, W.C.2

(Five doors from Charing Cross),

P.O. Box 126.

Telephone: Temple Bar 9451.

Keep in stock every description of

APPARATUS, CABINETS, BOOKS & SPECIMENS

for Collectors of

BIRDS' EGGS, BUTTERFLIES, MOTHS, Etc.

Catalogue (96 pages) sent post free on application.

Printed by A. BROWN & SONS, LTD., Perth Street West, Hull, and published by
A. BROWN & SONS, LTD., at 5 Farringdon Avenue, in the City of London.
November, 1938.

The NATURALIST

A MONTHLY
ILLUSTRATED JOURNAL

PRINCIPALLY FOR THE NORTH OF ENGLAND

Edited by

H. PEARSALL, D.Sc., F.L.S., and W. R. GRIST, B.Sc.,
The University, Leeds.

with the assistance as referees in special departments of

H. B. Booth, F.Z.S., M.B.O.U.

J. M. Brown, B.Sc., F.R.E.S.

W. H. Burrell, F.L.S.

Chris. A. Cheetham, F.R.E.S.

W. J. Fordham, M.R.C.S., L.R.C.P.,

D.P.H.

Riley Fortune, F.Z.S., F.R.P.S.

Professor A. Gilligan, D.Sc., F.G.S., M.I.M.E.

Mrs. Elsie M. Morehouse.

Thos. Sheppard, M.Sc., F.G.S., F.Z.S.

T. W. Woodhead, Ph.D., M.Sc., F.L.S.

Contents

	PAGE
Rare Spearhead in the Hull Museum (<i>illustrated</i>)	325-326
Records	326-327
Correspondence	328
The Starling	329-332
More Arachnida Records from the Whitby District— <i>H. Britten, F.R.H.S., and W. Falconer, F.R.E.S.</i>	333-335
News from the Magazines	328, 332, 335
Yorkshire Entomologists at Leeds— <i>M. D. Barnes</i>	336-337
Yorkshire Naturalists' Union : Annual Meeting of the Botanical Section	337
Reviews and Book Notices	338-340
Classified Index to Volume	341-348
Illustration	325
Title Page	
Appendix, Reprints of Y.N.U. Excursions Reports I-XXVI	

LONDON :

A. BROWN & SONS, Ltd., 5 Farringdon Avenue, E.C.4.
And at Hull.

Printers and Publishers to the Y.N.U

PRICE 1/6 net.

Prepaid Subscription
15/- per annum.



A NEW BOOK APPERTAINING TO THE ANCIENT
CITY OF YORK

A YORK MISCELLANY

Compiled from records
of the past four centuries

BY

I. P. PRESSLY, M.A.

ILLUSTRATED BY

ELLEN M. McLANE

*286 pages, Crown 8vo, with 24 Illustrations in Black and White,
and 9 Photographic Plates. Cloth Boards, Gilt Lettering.*

6/- NET.

Following much painstaking research work, the author of this book has succeeded in providing a truly kaleidoscopic representation of life in York during the past four centuries. The important part that the City has played in the history of England is clearly shown, and the reader is brought into intimate contact with many famous personages of their times. Altogether, it is an intensely interesting portrayal that should make a strong appeal to young and old alike, and the addition of plates and sketches is a feature that adds considerably to the attractiveness and to the historical value of the book.

Obtainable from all booksellers

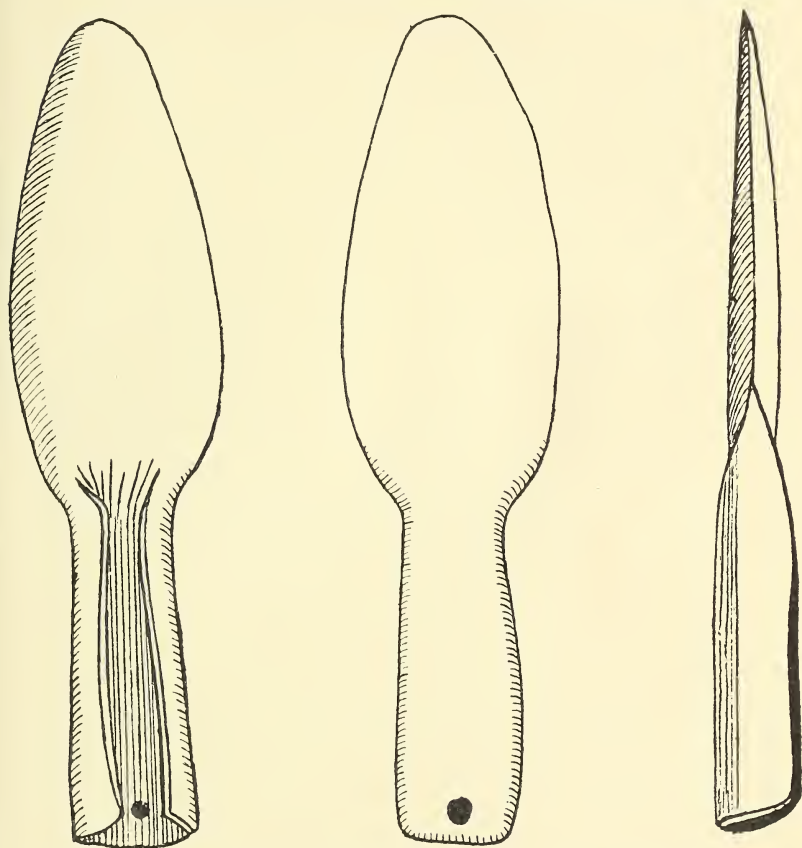
A. BROWN & SONS, LIMITED
5 FARRINGDON AVENUE, LONDON, E.C.4

And at HULL

RARE SPEARHEAD IN THE HULL MUSEUM

IN the *Transactions of the St. Albans and Hertfordshire Architectural and Archæological Society* is a paper on 'A reputed British hammered natural copper spearhead,' by Mr. Arthur E. Robinson. In this he says :

'At various places on the earth's surface, natural copper



(free from impurities) has been found until comparatively recently, when visible supplies became exhausted. As far as I am aware none of the weapons or implements found in Britain was made from native metal.

'As a result of inquiries which I addressed to him, Mr. T. Sheppard, the Director of the Hull Museums, kindly sent me a copper spearhead which had been described to him as British, but which he considered foreign. It is of an unusual type and is figured in the accompanying sketches. It will be noticed

that the socket for the shaft has been formed by hammering together the lower portion of a copper plate from which the spearhead was formed. These plates are hammered from nuggets or pieces of the copper nuggets. Tanged spearheads were easier to make and tanged spearheads and arrowheads are found in use in Africa to-day.

'Mr. Adrian Digby, of the British Museum, informs me that the Hull spearhead was manufactured in America. It is identical with types made by North American Indians from the native copper found in the Lake Superior district. I understand that there is no similar specimen in the British Museum, but there is one in the Pitt Rivers Museum at Oxford.'

RECORDS

NOTES FROM SPURN

(October 23rd. Fine, sunny weather, S.E. wind.)

Great Grey Shrike.—A bird was observed perching on a hawthorn bush, and was readily identified by the grey upper parts, black and white wings, and black eye patches.

Black Redstart.—Two birds were seen, one perching on the railway lines and the other on the beach. The sooty appearance and whitish wing patch were observed. In one case the bird repeatedly flew into the air in pursuit of insects, showing each time the fiery tail.

Firecrest.—Numerous Goldcrests were seen among the marram grass and bushes on the sand dunes and among these a Firecrest was observed. The whitish streaks over and below the eye, the distinct black streak through the eye, and the lighter underparts identified the bird, which was conveniently compared with neighbouring Goldcrests.

Short-eared Owl.—Three Short-eared Owls were flushed.

General.—Many Redwings were seen, several Robins and a mixed flock of Bramblings and Chaffinches. Of summer migrants a solitary cock Blackcap and a Swallow were seen. During the whole of the afternoon, a continual stream of Skylarks was observed passing southwards.—G. AINSWORTH, J. LORD, M.Sc.

A GREY PHALAROPE

A GREY PHALAROPE (*Phalaropus fulicarius jourdaini*) was shot near Wetherby on October 8th; the bird was in winter plumage.

ALBINO NOTE

HERE in the North Cumberland area I have had Albino varieties of three species brought to my notice this year. The first was a Song Thrush taken from a nest in which the other nestlings were normal. The bird was hand reared by the finder and still lives as a pet.

The second was a Lapwing. This bird could not be caught, and remained where it was discovered until the autumn when it was observed as a member of a flock.

The third record was that of a family of Field Voles found in a field by a young farmer. These were left at liberty and have since not been seen.—T. F. MARRINER.

RARE BIRDS IN NORTHUMBERLAND AND DURHAM IN 1938
In the current number of *The Vasculum* (Vol. XXIV, No. 4, pp. 118-122) Mr. G. W. Temperley writes of two Spoonbills (*Platalea l. leucorodia* L.) not quite in full mature plumage, that remained on the Northumbrian coast from June 22nd until August 9th. Mr. H. Tully reports on an Osprey (*Pandion h. haliaetus* L.) that was first seen near Whittle Dam waterworks on April 30th, and remained in the Tyne Valley for several weeks in May and June. Mr. H. Tully also records a Whiskered Tern (*Chlidonias l. leucopareius* Temm.). One remained in Budle Bay from June 28th until the first week in August. In the interests of the above birds it was not considered desirable to publish their visits until after their departure, so that bird lovers will have missed some real treats; but it was a wise precaution. In Durham, Mr. G. W. Temperley reports that an adult female Honey-Buzzard (*Pernis a. apivorus* L.) was shot a Hulton, near Sunderland, on September 30th. It was an exceptionally dark-coloured specimen.

WHITE STORK IN THE NORTH RIDING

THE occurrence of a White Stork (*Ciconia c. ciconia*) in the county should not go unrecorded in *The Naturalist*.

It first appeared at Great Ayton on October 27th, when it was seen by Miss K. Edmundson and others, and was photographed by Mr. Williamson. Its portrait also was published in *The Yorkshire Post* on November 9th. When I saw it on November 4th it was feeding on large earthworms in a wet pasture close to the village. The fact that its bill and legs were pink instead of red, and the long black scapulars and flight feathers were fringed with brown led me to think that it was an immature bird. It carried no ring and may well be a truly wild immigrant, for the White Stork breeds among the houses on the Continent, and has in consequence little fear of man.

This bird was noticed near N. Ormesby a week or two earlier, but it is not possible to be sure that it is the same individual as that recorded in Norfolk and Essex in early August (*Brit. Birds*, Vol. XXXII, p. 154). Mr. Williamson informs me that it is still (Nov. 22) in or near the village, and if left undisturbed it seems likely to remain there until severe weather cuts off its food supply.—R. M. GARNETT.

CORRESPONDENCE

THE NORTHERN ECOLOGICAL ASSOCIATION,
GOATHLAND,

November 7th, 1938.

To the Editors of *The Naturalist*.

DEAR SIRS,

In reply to the enquiry of my friend, Mr. T. Hyde-Parker, of Reighton, in regard to rabbits, I can only say that in the season of 1938 there have been fewer rabbits around my house than in that of 1937. In reference to his remark about the 'droppings' on the little heaps of soil excavated from his rose-beds, this is, in my experience, quite a common incident; in fact, it is the habit of the rabbit to do so. The best way to destroy rabbits is to tip a couple of cart-loads of sand in the field. The rabbits will make burrows in the heaps, and breed in the burrows. When the young rabbits are a few days old they are pulled out of their nests and killed. In this way we have killed as many as forty-two rabbits in a two-acre paddock in one season. Really there is no rabbit menace and no bracken menace so long as we do not sit down and watch the one breed and the other grow. I have exterminated the bracken on my land by the simple process of cutting it down before the fronds uncurl.

ROBERT J. FLINTOFF.

SPRING COTTAGE,
PALLATHORPE,
BOLTON PERCY.

To the Editors of *The Naturalist*,
Leeds University.

DEAR SIRS,

With reference to Mr. Peck's 'Morchelloid Cortinari' in the current number, a very similar specimen was found by Miss L. M. Anderson on the Fungus Foray of the Leeds Co-operative Naturalists at Saw Woods, Thorner, 24/9/38. The colour reminded one of *L. laccata* var. *amethystina* and the first thought was that it was this specimen 'gone wrong.' On cutting in two no gills were to be seen and the cap was solid throughout. Microscopical examination shewed purple and purple-brown spores but I was unable to detect either asci or basidia.

Some years ago a curious specimen of *Pluteus cervinus* was found which in addition to the normal pileus bore a similar structure inverted from the centre of the cap, complete with gills and spores, the gills being exposed above.

Mr. Bevan's note, p. 322, is extremely interesting. His description of the flies being glued on by their feet suggests that they were attacked by *Empusa muscoe* Cohn., a common fungus on many dipterous insects. The fungus shews itself as a white mould at the joinings of the body segments and the articulations of the feet. For some reason the fungus has been rather scarce this year so far as my observations go.

Yours faithfully,

W. G. BRAMLEY.

British Birds for November contains the first instalment (21 pages) of the 'Report of the Lapwing Habitat Enquiry,' instituted by the British Trust for Ornithology (E. M. Nicholson). Reports were received from observers in the North and West Ridings of Yorkshire, to which there are many references; but none were sent from the East Riding where Lapwings occur commonly as breeders and as migrants in many areas. The Report is very thorough and deals with all possible types of habitat. Other articles are on 'Shetland Gannet Colonies' (Messrs. Fisher, Stewart, and Venables); and on the 'Proportion of Sexes in Roosting Chaffinches' (Hon. G. Charteris). The 'Short Notes' include a record of two Spoonbills in Northumberland (T. R. Goddard).

THE STARLING

A BIRD which, partly owing to its great and ever-increasing numbers, and in part to the unfavourable 'press' it generally receives, has been a good deal before the public eye of late years, is the Starling. An attempt to summarise something of what is known of this much-maligned species might, therefore, have a certain interest.

The name was originally Stare (A. S. Stær).

Blackbird and thrush in every bush,
Stare, linnet, and cock-sparrow.

to which, in course of time, was added the suffix, *ling*. Now the use of a diminution (as in the similar formation of *darling* from *dear*) commonly implies a certain degree of affection, and this is passing strange, for our subject is, I fear, less likely to inspire that sentiment, in the average person, than many other popular species. Indeed, while he has many estimable qualities—including a weakness for personal ablution even in the most icy weather—I should scarcely regard the Starling as a really likeable bird.

It is, perhaps, superfluous to remark that Starlings were not formerly anything like so plentiful as is now the case. Not only has there been an enormous increase even within my own recollection, but I do not think that Gilbert White ever mentions the bird, nor can I find any reference in St. John's *Wild Sports and Natural History of the Highlands*. It must now be one of our best-known birds, both in urban and rural districts. A maid of ours, I remember (certainly a town product) used to divide the whole Class *Aves* into but two groups: the larger were 'crows' and the smaller, 'sparrows'; but even she, I think, would now have to recognise the Starling as an intermediate species!

Equally, one need hardly say anything about the bird's appearance, beyond remarking that it is, in the hand, much more handsome and brightly marked than might be suspected by anyone only noticing it casually on the wing, or stalking about, in its rather aggressive way, as it busily probes the surface of grass fields and lawns. One point, however, is worthy of mention; the young bird, when full-sized but in immature plumage, is so different in appearance from the adult that it used to be considered a quite distinct species, and was known as the Solitary Thrush. More than once have I had specimens brought to me for identification. There are also certain seasonal variations in the plumage of the adults, such, for instance, as a more speckled appearance in winter; and this is reputed to be more noticeable in the female. The beak, too, brownish in winter, turns to a lemon yellow as spring comes round. This change of colour in the bill would seem to coincide with the commencement or renewal of the

sexual impulse, and recalls a theory recently propounded by a certain scientist—and confuted by *The Ibis*—that London Starlings were two months in advance of country birds. Really, the assurance of these Londoners knows no limits!

The Starling's song is certainly one of his most pleasing features. At times he seems absolutely brimming over with melody for which he cannot find adequate expression—a state in which, as one who can play no musical instrument, I fully sympathise! A sunny morning at any season of the year is enough to set him off:

Early in springtime, on raw and windy mornings,
Beneath the freezing house-eaves I heard the Starlings sing.

One of his favourite perches, in such moments of rapture, is the top of a chimney-pot, and his musical efforts have sometimes the strangest effect when heard in bed, the sound coming down the chimney. The Starling is always reputed to be a great mimic, and, in captivity, he can certainly be trained to whistle tunes, and even to attempt speech (who does not recall Sterne's pathetic description of the caged starling!). Most of his efforts in a wild state, however, I should put down to improvisation pure and simple, especially as passages reminiscent of other birds may be noted equally in places where the original could hardly have been heard.

The nest of the Starling is almost invariably in a hole, and practically any hole will do provided it be at a decent height from the ground. A favourite site is underneath a roof, especially if it be of old pantiles. Holes in trees are also very popular. In a ghyll near by, where there are many damaged ashes and sycamores, one is, in spring, constantly arrested by the birds' alarm notes; for the Starling, far from preserving a discreet silence, seems to positively advertise its nest. The fact of this nest being in a hole, and at a certain height, saves it from many enemies; and, though Waterton mentions the case of a weasel climbing to one some 10 ft. from the ground and abstracting a young bird, the schoolboy (I speak feelingly) is often defeated in his efforts, especially as the nest is usually pretty far in as well. Fortunately the average boy, less ambitious in his ideas than is the Oologist, contents himself with one egg of a kind; which modest demand, in the case of this species, may often be satisfied without robbing a nest at all, for no bird I know of is so given to laying at random, so to speak, odd eggs being found on the lawn, roadside, or anywhere. There is now no doubt as to the Starling being double-brooded, though, as with other birds, not invariably so. Further, Canon Atkinson, after careful study, definitely states that they are not bigamists but that they 'pair literally and simply.'

With the question of diet, we approach a controversial

point, for it would certainly appear that the Starling is now so plentiful that its original and legitimate food no longer suffices. In old days, its efforts were entirely beneficial. Waterton says: 'There is not a bird in all Great Britain more harmless than the Starling.' Even now, it does an immense amount of good. Consider but three items in its menu—'leather-jackets,' 'wireworms,' and the larvæ of the cockchafer—and there can be little doubt that the balance is in its favour. It is frequently charged with inroads on our fruit, and this on such good and varied authority that I should not attempt to refute the accusation—beyond saying that, while various other birds attack *my* insignificant fruit crop, I have never yet found Starlings guilty. Indeed, the only fault I have to find, so far as food is concerned, is in winter when, unless the scraps, thrown out to help the really deserving and destitute, are broken up exceedingly small, a few greedy Starlings will gobble the lot before anyone else gets a chance! They are also accused of wanton damage in the flower-garden, but here again I have never detected any delinquency. Most of their time is spent searching for insects, and mainly on the ground, though they sometimes seem to jump up and catch them on the wing. Occasionally, too, they may be observed hawking in the air, their flight at such times strongly resembling that of the swallows. When feeding, they consort freely with rooks, jackdaws, and perhaps particularly with lapwings.

Whatever may be the effect, from a human standpoint, of any extension in the Starling's dietary, there is, unfortunately, no doubt that these birds may be an intolerable nuisance in places where they elect to roost, and when their numbers are greatly added to by immigrants from overseas. These visitors sometimes arrive in immense numbers. In the case of one such invasion last year in Norfolk, we are told that 'the sky was black with Starlings,' and one shopkeeper is reported as saying: 'The birds hit the roof with a noise almost like a thunderbolt.' These, of course, are common figures of speech which one does not take too literally, but it would certainly appear that there were a good many birds, especially as, in the grounds of Norwich Castle, branches were broken from the trees by their weight.

We are all of us familiar with the sight of repeated great flights, making off or arriving, as evening draws on:

And multitudinous, when winter reigns
The Starlings on their wings are borne aloft.

and one is often struck with the peculiar whirling effect—as though the flock, like our earth, moved forward through space while revolving on its own axis! Reed-beds form a favourite roosting-place, and, as Miss E. L. Turner says, it is impossible

to convey any adequate idea of the number which assemble there ; while the sound of their chattering as they settle down is like a large engine blowing off steam. They also roost largely in woods and plantations, and here they are a great curse, for not only do they damage the trees, but they foul all the undergrowth and soil, offending alike eye and nose. The keeper certainly regards them with anything but enthusiasm in his coverts, especially as any means he may adopt to drive them off—such as firing shots or lighting sulphur fires—are equally effective in scaring away his pheasants. Furthermore, this only means moving them on somewhere else. It's a pity that the Starling is not more desirable from a comestible standpoint. It might then be worth one's while to thin the flocks a bit ; and they often offer good sporting shots.

And now we must touch on the most serious charge of all—one, however, it is only fair to say, that is ' non-proven ' : namely, that the Starling is responsible for the introduction and spread of foot and mouth disease. A great deal has been written in the Press on this subject, much of it of intemperate nature, nor are the writers invariably well informed. One correspondent—a man, too, who should know better—writing to a leading East Anglian paper, talks of ' conclusive proof,' refers to Starlings as ' winged messengers of death to cattle,' and says that ' 95 per cent. of the Starlings with us to-day are from abroad where foot and mouth disease is overwhelming.' But wild statements such as these carry little weight, especially when a real authority like Dr. Collinge writes : ' I venture to state that, so far, we do not possess any reliable evidence whatever which supports them. If there is any scientific evidence relative to these matters, by all means let it be made known to the general public.' Indeed, it is fair to say that, were the immigrant hordes really responsible, there would be an annual and practically simultaneous outbreak along the whole of our Eastern seaboard, and this would spread uniformly over the country, instead of the disease breaking out sporadically and often in isolated places. Even if birds are responsible—which, of course, is far from certain—other species might also come in question. Let us reserve our judgment on this point until more conclusive evidence is forthcoming, and remember that it is not only the dog who is likely to suffer through being given a bad name !

The Entomologist's Record for November contains ' Notes on the Orthoptera of the Middle Thames Basin,' by L. R. A. Grove ; ' Notes on the Winter Flight, in Mild Climates, of Vernal and Autumnal Moths,' by E. P. Wiltshire ; ' The Orthoptera of North Germany,' by M. Burr ; several collecting notes and supplements, ' The British Noctuae and their Varieties,' by H. J. Turner, and ' Butterfly Races and Zygaenae of Macedonia,' by R. Verity.

MORE ARACHNIDA RECORDS FROM THE WHITBY DISTRICT

H. BRITTEN, F.R.H.S., AND W. FALCONER, F.R.E.S.

[MR. BRITTEN'S removal from the county to take up an important position in Surrey leaves a much-to-be-regretted gap in the ranks of the Yorkshire field naturalists. As shown by papers in *The Naturalist* he has been most successful in his investigation of the lower fauna of the Whitby district, adding several species of spiders, beetles, and flies not only new to V.C. 62, but some of them rare and unexpected additions to the county list. He will be greatly missed by the Entomological Section of the Union and in particular owing to the dearth of workers by the arachnologists.—W.F.]

The present list is the third dealing with the Arachnida of the Whitby district.¹ As before Mr. Britten submitted his captures to Dr. A. R. Jackson for identification. One among them, *Oonops domesticus* De Dalm., marked by a dagger in the list, is new to the county and a recent addition to the British fauna known only from a few southern localities. It bears a close resemblance to the commoner *O. pulcher* Templ. from which by microscopical examination its abdomen with a denser covering of stronger hairs and the tibiae of the first and second pairs of legs with two rows of spines beneath, 5-5 instead of 4-4 will distinguish it. Four other spiders and one harvestman, marked by an asterisk, are reported from the district for the first time. (1) *Leptyphantes nebulosus* Sund. a local but widespread species; 5 other localities in V.C. 62, and many in V.C. 63. (2) *L. mengii* Kulcz. difficult to distinguish from others of the genus, previously in V.C. 62, Cleveland, 'every locality visited,' J. W. Harrison. Present in the other V.C.s (3) *Araneus sturmi* Hahn.—probably the Gunnergate Woods, *A. triguttatus* Fabr. was this species. Only a few Yorkshire examples, but I have a hitherto unrecorded ♀ from Whittingham, V.C. 61. (4) *Pirata latitans* Bl., a frequenter of damp places, previous county records being 4 localities in V.C. 61. The harvestman, *Megabunus diadema* Fabr., is widespread but not numerous in the county.

Some other species in the list because of the paucity of records in the county are worthy of separate mention, viz., *Theridion vittatum* C. L. Koch, *T. bimaculatum* Linn., *Aulacocyba subitanea* Cb., *Oedothorax apicatus* Bl., *Leptyphantes cristatus* Menge, *L. tenebricola* Wid., *Ero cambridgii* Kulcz., *Philodromus emarginatus* Schrnk. Mr. Britten mentions in a letter that the last-named Uppang ♀ was found on the cliff—an unusual situation, while *Thyreosthenius biovatus* Cb.,

¹ Vide *The Naturalist*, Oct., 1936, pp. 221-7, and Nov., 1937, pp. 273-8.

a dweller with ants, occurred in the nest of *Formica fusca* at Sleights, and the Helwath Beck examples in those of *F. pratensis*, practically in all of them. It also lives with *F. rufa*, the 'hill' ant, its more usual commensal.

MR. BRITTEN'S LIST

ARANEAE

- Dictyna arundinacea* L., ♀ Helwath Beck, 15/4/38.
Oonops pulcher Templt., ♀ Whitby, 8/11/37.
 †*O. domesticus* De Dal., ♀ Whitby, 20/10/37.
Harpactes hombergi Scop., ♂♀ Mulgrave Woods, 29/1/38.
Draassodes lapidosus Walck., ♀ Hole of Horcum, 1/5/38.
Theridion sisyphium Clerck., Helwath Beck, 15/4/38.
T. vittatum C. L. Koch., ♀♀ Mulgrave Woods, 16/4/38.
T. bimaculatum L., Mulgrave Woods, 26/2/28.
T. pallens Bl., ♂ Helwath Beck, 15/4/38; ♂♂ Mulgrave Woods, 16/4/38.
Pholcomma gibbum Westr., ♂♂ Upgang, 6/11/37.
Robertus lividus Bl., ♂ Upgang, 6/11/37; ♂ Hole of Horcum, 1/5/38.
Ceratinella brevis Wid., ♀ Helwath Beck, 15/4/38.
Lophocarenum mengii Sim., ♂ Sleights, 22/10/38.
Araeoncus humilis Bl., ♂♂ Whitby, 20/10/37; ♂ 8/11/37.
Tiso vagans Bl., Whitby, ♂ 20/10/37; ♂ 19/2/38.
Diplocephalus cristatus Bl., ♂♂ Whitby, 20/10/37; ♂ 8/11/37; ♀ Upgang, 6/11/37; ♂ Mulgrave Woods, 29/1/38.
Plaesiocraerus fuscipes Bl., ♂♂ Upgang, 6/11/37; ♂ Whitby, 2/1/37; ♀ Goathland, 5/3/38.
Thyreosthenius biovatus Cb., ♀ Sleights, 22/10/37; ♀♀ Helwath Beck, 2/4/37.
Colobocyba pallens Cb., ♂♂ Skelder, 4/3/38.
Aulacocyba subitanea Cb., ♂♂ Whitby, 20/10/37.
Dicymbium nigrum Bl., ♀ Whitby, 20/10/37; ♀ Goathland, 5/3/38.
Savignia frontata Bl., ♂ Helwath Beck, 15/4/38.
Trachynotus nudipalpis Westr., ♀ Sleights, 22/10/37; ♂ Skelder, 4/3/38; ♀ Goathland, 5/3/38.
Walckenaera acuminata Bl., ♂ Upgang, 6/11/37; ♀♀ Goathland, 5/3/38; ♂ 12/3/38; ♀ Hole of Horcum, 1/5/38.
Cornicularia unicornis Cb., ♀ Goathland, 5/3/38.
C. cuspidata Bl., ♂ Mulgrave Woods, 26/2/38; ♀ Goathland, 12/3/38; ♀ Helwath Beck, 1/5/38.
Gonatium rubens Bl., ♂ Upgang, 6/11/37; ♀ Whitby, 2/1/38; ♀ Mulgrave Woods, 26/2/38; ♀ Goathland, 5/3/38.
Blaniargus herbigrada Bl., ♀ Goathland, 5/3/38.
Erigone atra Bl., ♂ Whitby, 20/10/37; ♂ 8/11/37; ♂ Goathland, 12/3/38.
E. dentipalpis Wid., ♂♂ Whitby, 20/10/37; ♂ 8/11/37; ♂♂ Mulgrave Woods, 29/1/38.
E. promiscua Cb., ♂ Helwath Beck, 15/4/38.
Eoethorax apicatus Bl., ♀♀ Whitby, 19/2/38; ♀ Helwath Beck, 1/5/38.
O. fuscus Bl., ♀♀ Mulgrave Woods, 29/1/38.
Porrhomma pygmaeum Bl., ♂ Mulgrave Woods, 29/1/38; ♀ Helwath Beck, 15/3/38.
Microneta viaria Bl., ♀ Hole of Horcum, 1/5/38.
Meioneta rurestris C. L. Koch., ♂♂ Whitby, 20/10/37; ♂♂ 8/11/37.
Centromerinus bicolor Bl., ♀ Whitby, 20/10/37; ♀ Upgang, 6/11/37.
Centromerus dilutus Cb., ♀ Sleights, 22/10/37.
 **Leptyphantes nebulosus* Sund., ♂♀ Whitby, 20/9/37.
L. leprosus Ol., ♀♀ Whitby, 20/10/37.
L. cristatus Menge., ♂♂ Goathland, 5/3/38; ♀ 12/3/38.
L. ericaeus Bl., ♂♂ Upgang, 6/11/37; ♀ Goathland, 5/3/38.

- L. zimmermannii* Bernk., ♀ Mulgrave Woods, 29/1/38.
L. tenuis Bl., ♂ Upgang, 6/11/37; ♀ Whitby, 8/11/37; ♂ Mulgrave Woods, 26/2/37; ♂ Goathland, 12/3/38.
 **L. mengii* Kulz., ♂♂ Goathland, 12/3/38.
L. tenebricola Wid., ♂ Hole of Horcum, 1/5/38.
Poeciloneura variegata Bl., ♂♂ Upgang, 6/11/37.
Linyphia triangularis Clerck., ♂ Goathland, 5/3/38.
L. peltata Wid., ♀ Helwath Beck, 15/4/38; ♀ Hole of Horcum, 1/5/38.
L. clathrata Sund., ♂ Whitby, 19/2/38; ♂ Mulgrave Woods, 26/2/38; ♀ Goathland, 5/3/38, 12/3/38.
L. pusilla Sund., ♀ Goathland, 5/3/38.
Stylophora concolor Wid., ♀ Upgang, 6/11/37; ♀ Whitby, 2/1/38; ♂ Goathland, 5/3/38.
S. nigrinus Westr., ♂♂ Mulgrave Woods, 29/1/38; ♀ 26/3/38; ♂ Goathland, 5/3/38.
S. pullatus Cb., ♀ Goathland, 5/3/38; ♂ 12/3/38.
Bathyphantes gracilis Bl., ♂ Goathland, 5/3/38.
Pachygnatha clerckii Sund., ♂ Goathland, 12/3/38.
P. degeeri Sund., ♀ Whitby, 19/2/38; ♀ Goathland, 12/3/38.
Meta segmentata Clerck., ♀ Goathland, 12/3/38; ♀ Helwath Beck, 15/4/38; ♀ Hole of Horcum, 15/4/38.
 **Araneus sturmi* Hahn., ♂ Mulgrave Woods, 30/4/38.
A. quadratus Clerck., Helwath Beck, 15/3/38.
Ero cambridgii Kulz., ♂♀ Mulgrave Woods, 26/2/38.
Philodromus emarginatus Schrank., ♀ Upgang, 6/11/37; ♀ Helwath Beck, 15/4/38.
Coelotes atropos Walck., ♂ Hole of Horcum, 1/5/38.
Cryphoea silvicola C. L. K., ♂♀ Skelder, 4/3/38.
Pirata piraticus Clerck., ♂♀ Goathland, 12/3/38.
 **P. latitans* Bl., ♀♀ Mulgrave Woods, 26/2/38.
Trochosa terricola Thor., ♂ Upgang, 6/11/37; ♀ Goathland, 12/3/38.
Lycosa amentata Clerck., ♂ Mulgrave Woods, 29/1/38.
L. lugubris Walck., ♂♂ Hole of Horcum, 1/5/38.

OPILIONES

- Nemastoma lugubre* Mull., ♂♂ Goathland, 5/2/38.
N. chrysomelas Herm., ♂ Mulgrave Woods, 29/1/38.
Oligolophus agrestis Meade., ♂ Whitby, 2/1/38.
Platybunus triangularis Hbst., ♂ Goathland, 12/3/38.
 **Megabunus diadema* Fabr., ♂ Hole of Horcum, 1/5/38.

Pseudoscorpiones

- Chernes nodosus* Schrk., Whitby, 7/10/37.
Obisium muscorum Leach., Whitby, 2/1/38; Mulgrave Woods, 29/1/38, 26/2/38; Goathland, 5/3/38.

The Jubilee number of *The Entomologist's Record* contains 'Prologue,' by G. T. Bethune-Baker; 'Fifty Years of Entomology,' by A. D. Imms; 'The Study of Microlepidoptera,' by T. B. Fletcher; 'Some Changes in Our Outlook on Variation,' by E. A. Cockayne; 'The Gradual Change in the Longtime Insular Outlook of the British Entomologist,' by Rev. G. Wheeler; 'Fifty Years in Our Study of Protective Resemblances as Exemplified in the Order Insecta,' by Sir E. B. Poulton; 'Half a Century of Orthoptera,' by M. Burr; 'Progress in our Knowledge of British Coleoptera, Ants, and Myrmecophiles,' by H. Donisthorpe; 'Diptera: Progress and Obstacles to Progress, 1890-1938,' by J. E. Collin; 'Diptera, 1890-1938,' by H. W. Andrews; 'Economic Entomology,' by T. B. Fletcher; 'The Dermaptera. Historical Notes,' by W. D. H. Hincks, and 'A Brief History of the Entomologist's Record and Journal of Variation,' by H. E. Page.

YORKSHIRE ENTOMOLOGISTS AT LEEDS

M. D. BARNES

THE Annual Meeting of the Entomological Section of the Yorkshire Naturalists' Union was held in the Church Institute, Leeds, on Saturday, October 22nd. In the absence of Mr. J. M. Brown, Mr. E. G. Bayford presided over a gathering of some twenty members and visitors.

The exhibits were numerous and varied, giving rise to interesting discussion.

COLEOPTERA were shown by Messrs. Bayford, Smith, Pearce, Hincks, Dibb, Hartley, and Barnes.

Mr. BAYFORD exhibited specimens of *Sericoderus lateral*is (Gyll.) and *Metamasius hemipterus* (L.), both imported with bananas into Barnsley, also examples of *Hylotrupes bajulus* (L.) taken in Barnsley (see *Naturalist*, 1938, pp. 254-6).

Rev. E. J. PEARCE.—Examples of *Haliplus furcatus* (Seid.), a rare waterbeetle from Somerset, and varieties of *H. obliquus* (F.) and *H. fulvus* (F.) from L. Derg and South Kerry, Eire, respectively.

Mr. W. D. HINCKS.—A very interesting series of beetles taken on Y.N.U. excursions during 1938. Examples of imported coleoptera from a Leeds warehouse included *Callidium violaceum* (L.), *Tychius niger* (Pk.), and *Antherophagus pallens* (Gyll.).

Mr. J. R. DIBB.—Beetles taken on the Askern excursion, including an interesting series of *Melasis buprestoides* showing the great variation in size.

Mr. A. SMITH.—A number of beetles taken in the York district, the most interesting of which included examples of *Pogonochærus hispidus* (L.), *Clytus mysticus* (L.), *Lyctus brunneus* (S.), *Dorcus parallelipipedus* (L.), and *Anisosticta 19-punctata* (L.).

Mr. P. HARTLEY.—A specimen of *Sphærites glabratus* (F.), a rare capture from Wharfedale, together with an interesting series of British and European Carabids.

Mr. M. D. BARNES.—A box of Norwegian beetles and specimens of uncommon occurrence from Yorkshire and Nottinghamshire.

DIPTERA

Mr. C. A. CHEETHAM.—Examples of the crane-fly *Prionocera subsericornis* Ztt. and *P. turcica* from Austwick Moss, the former fly being a recent addition to the British list.

Mr. W. D. HINCKS.—Examples of imagines and pupal cases of *Stratiomys riparia* from Hedon.

HYMENOPTERA

Mr. W. D. HINCKS.—A series of Ichneumons, including specimens of *Hygrocryptus brevispina*, a recent addition to the British list from Wicken Fen.

LEPIDOPTERA

Mr. A. SMITH.—A short but very interesting series of wainscot moths from York. These included specimens of *Senta maritima*, *Calamia phragmitidis*, and *Nonagria dissoluta*.

Mr. E. DEARING.—A specimen of *Abraxas grossulariata* ab. *lacticolor* from the Elland district.

ODONATA

Mr. E. G. BAYFORD.—An example of *Æschna juncea* (L.), the first of this species to be recorded from the Barnsley district.

Mr. C. A. CHEETHAM.—Examples of *Sympetrum danica* and *S. striolatum* from Austwick, the latter new to the area.

PLANT GALLS

Mr. W. G. WINTER.—An interesting series of galls, from Mr. Burkill, of London. Among them branches of *Salix caprea* galled by a bacterium *Pseudomonas tumæfaciens* and the grass *Agropyron repens*

galled by a hymenopteron. With regard to the above-mentioned galls Mr. Burkill is anxious to receive information from anyone who might encounter them.

From an entomologist's standpoint the season had been most disappointing, very few of the migrating species of butterflies or moths had been seen, no 'Painted Ladies,' here and there an odd 'Red Admiral,' and very few of the immigrant hawk moths. The smaller species of dragonflies were scarce, though later in the year other larger species were more plentiful but in less than normal numbers. Mr. Rosse Butterfield drew attention to the change in the insect fauna of certain districts due to the increase of the bracken at the expense of the heather and bilberry, the rich fauna of the latter being replaced by the meagre fauna of the bracken.

YORKSHIRE NATURALISTS' UNION:

ANNUAL MEETING OF THE BOTANICAL SECTION.

October 8th, 1938

THIS Section had its annual meeting in the Botanical Department of Leeds University, on Saturday, October 8th. In the afternoon the reports of the various committees were presented and discussed and nominations for the various offices and committees were put forward for election at the General Meeting of the Union at Hull on December 3rd, 1938.

The weather we have experienced this year provided the main theme of the discussions and many different views were brought out as to what type of the many different sorts, mild winter, drought, frosts, cold winds, excessive wet, etc., were responsible for the lack of this or that fruit or the wilting of foliage or second flowerings and growths. Before the evening session we were again indebted to Mrs. Priestley, who, with the aid of Miss Scott, provided a very welcome cup of tea, and they were heartily thanked for their kindness. In the evening Mr. Milsom drew attention to some unknown ecological factor which produced a relatively poor moss flora on slate rocks near Llangollen, almost similar to the poor moss flora of the Pennine millstone grits. Whereas on the slate rocks of Ingletton, only some twenty miles from the rocks cited, and at Dolgelly, the moss flora is quite rich; generally speaking, mosses are more abundant in the wetter western areas and Mr. Milsom suggested that it might be wise to consider the possible effect of the sea salt influence.

Prof. Priestley and Miss Scott demonstrated 'Ripple grain' in sycamore from Malpas, Cheshire. Prof. Priestley suggested possible explanations and asked members to see if this grain could be found near at hand to enable experiments to be conducted; ash, birch, chestnut, and hornbeam were suggested as worth examining. Prof. Priestley showed a photograph of a sycamore with a branch which had been ringed which was in full leaf before the rest of the tree had started to open its foliage.

A short note from Mr. Flintoff on the idiosyncrasy of some trees; he noted that certain oaks in his immediate neighbourhood were always the earliest to come into leaf and others always the last; suggested a very useful line of investigation and one that our members might follow out in their own immediate neighbourhood. Other members seem to have regarded special trees as the ones to watch for the earliest leaves, and it will be interesting to follow this up more carefully by definitely noting the differences of particular trees of the same species. This should be done on species not liable to hybridization; the oak, ash, sycamore, and beech were suggested.

Prof. Priestley was heartily thanked for his kindness in inviting us to his Department and helping to make the Botanical Section into almost a family party, and in his reply he hoped that we should meet again in the same place next year.

REVIEWS AND BOOK NOTICES

The Stuff We're Made Of, by W. O. Kermack and P. Eggleton, pp. 342, 55 figs., and 8 plates. Arnold, 7/6. This book attempts to interpret the immensely complicated chemical processes which go on in our bodies and in those of other living organisms. In short, it treats biochemistry more or less along similar lines to recent attempts to popularise the stars and the universe. Because of the complexity of the systems described, it is not perhaps a book which will appeal to everybody, though it can hardly be denied that most people would profit by a fairly extensive knowledge of its contents. To students of general biology and to those who work on the fringes of biology, however, it is likely to prove a volume of absorbing interest. Stiff reading there may be at times for the unchemical, but the results are well worth an effort to grasp the ideas of what is in most ways a remarkable book.

Systematic Notes upon British Aquatic Coleoptera : I, Hydra-dephaga, by F. Balfour-Browne, pp. 95, 29 figs. Nathaniel Lloyd & Co., Ltd., London. This little book is a corrected and revised edition of a series of papers which originally appeared in the *Entomologists' Monthly Magazine*. Its contents may thus be familiar to many entomologists. They should certainly be known to all interested in the Coleoptera or in fresh-water biology. The chief object of this work is to prepare a list of British Aquatic Coleoptera which might serve as a list of *nomina conservanda*, to remain immune from the attacks of nomenclators. Professor Balfour-Browne appears to have spared no trouble to succeed in this. He has, moreover, drawn freely upon his profound knowledge of these aquatic insects in analysing the salient features of each group of genera and as a result, the notes on the different species are of great systematic value. Hence, whatever the fate of the list of names may be, the material of this work promises to remain as a foundation for the further study of the group concerned.

Quest for the Griffon, by Robert Atkinson, pp. 186, 24 plates. Wm. Heinemann, Ltd., 7/6. This is an account of an excursion to Spain, made by three undergraduates with the particular object of photographing at close quarters the Griffon Vulture, the largest of European birds. The excellent plates included in this book bear testimony to the success of the expedition from this point of view. In obtaining these plates, they had adventures which are the justification for the book itself. It is written in an easy style and so will please those who like to hear of out-of-the-way places and unusual doings. The naturalist will gain added enjoyment and interest from the records of detailed observations at close quarters, which serve in particular to illustrate the great differences which may exist between two individuals of the same species.

Animal Life in Fresh Water, by Helen Mellanby, pp. viii and 296, 211 figs. Methuen, 8/6. This book is essentially a description of all the main types of invertebrate animals commonly found in fresh water in Britain. There is, so far as the reviewer is aware, no book in English which covers anything like this field, and on this ground alone Mrs. Mellanby's work is sure to be welcomed. It possesses, in addition, the advantage of being couched in language free from unneeded technicality and its style is as clear as the many admirable and original drawings. It is particularly welcome as a text-book because it reflects the tendency to go for biological studies to live creatures in their natural homes. Hence it is a book which should appeal to a wide and growing circle of readers, among students, teachers, and amateur naturalists. To these and to all interested in fresh-water biology it is strongly recommended.

Wild Flowers in Britain, by R. Gathorne-Hardy, pp. 120, 104 plates, and numerous line drawings. B. T. Batsford, Ltd., 8/6. This

is a somewhat unusual book, because the author frankly takes an interest, which is mainly artistic, in looking for and writing about uncommon plants. Those who know these plants or who wish to know them will get a good deal of enjoyment from these pages. Most naturalists will admire the numerous and excellent photographic illustrations and will enjoy the colour plates and line drawings of John Nash. On these grounds the book may be recommended, particularly perhaps as a present. A word of warning may, perhaps, be given that the book is in no way an aid to identification.

A Text-book of General Botany, by **R. M. Holman** and **W. W. Robbins**, pp. 664, 482 figs. Chapman & Hall, Ltd., 20/- net. This is the fourth edition of a well-known text-book, first published 14 years ago. Each successive edition has undergone improvement and the result is a book of noticeable breadth and a distinctly high standard. Perhaps one of the features which is recognised as most characteristic of this text-book is the high level reached by the numerous illustrations, which have been further improved in the present edition. The treatment of salt absorption and of the movement of water and dissolved substances in plants has also been re-written, and the section dealing with the origin of stem and leaf structures is now treated developmentally. There is also a discussion of the rôle of hormones in directional growth, in addition to a large number of other and minor changes.

A Laboratory Guide for a Course in General Botany, by **L. Bonar**, **L. Roush**, and **R. M. Holman**, pp. 110, 1 fig. Chapman & Hall, 6/-. This is really a companion volume to the text-books of Holman and Robbins, dealing with practical work suitable for advanced school or first-year college students, though covering a fairly wide field of work. The book, now also in its fourth edition, embodies a considerable practical experience and can be recommended to teachers or to students working by themselves.

General Biology, by **Strausbaugh** and **Weiner**, pp. xii+556, with 13 coloured and 271 black and white figured plates. Chapman & Hall, 18/6. This new biology book from America is copiously illustrated with very clear and effective black and white diagrams and coloured plates. The material included has been selected to furnish a satisfactory biological foundation for psychology, sociology, history, literature, and, in fact, any field requiring a general knowledge of life phenomena. It would also serve as an introduction to biology for the first year medical student and Higher School Certificate candidate. The authors have a decided flair for making their subject interesting, and this point alone is a most valuable recommendation. In addition, the book is thoroughly up to date and almost encyclopedic in its scope.

Higher Certificate Biology Test Papers, by **H. G. Foott**, B.Sc. Methuen, 1/6. This collection of questions should prove useful to teachers and students preparing for Higher School Certificate Biology. Questions are grouped under appropriate headings as far as possible and many of them are taken from actual examination papers set by the Universities, London, Oxford, and Cambridge, and by the Central Welsh Board.

The Handbook of British Birds, Vol. II (Warblers to Owls), by **Witherby** (Editor), **Jourdain**, **Ticehurst**, and **Tucker**, pp. xiv+352 with 30 plates, 41 text-figures, and 6 maps. Witherby, 25/-, or 21/- for those who have entered their names for the complete set. To say of this volume that its standard is well up to that of Volume I is high praise. As before we are given coloured plates which figure male, female, and immature plumages, and these are amplified where necessary by useful line drawings in the text. Of the six maps, four show breeding distributions in the British Isles—Reed Warbler, Nightingale, Great

Spotted Woodpecker, and Little Owl—one deals with positions and dates of recovery in Africa of Swallows ringed in Europe, and one with the rate of spread of the Swallow over Europe during the spring. We are glad to read in the preface to this volume that Volume I has had a gratifying reception, and we extend to the Editor and his colleagues our heartiest good wishes for continued success. They are doing a great work for British ornithology and deserve the practical support of all natural history societies in the country.

A History of Sussex Birds in Three Volumes, by **John Walpole-Bond**, with 53 coloured plates by Philip Rickman. Witherby, £5/5/- the set. This is easily the most complete and detailed county ornithology we have seen. Mr. Walpole-Bond has been amassing his material for over thirty years and the final accomplishment sets a very high standard indeed for this kind of work. Although he deals with nearly 450 species, the author will definitely admit only 405 for the county. This is a formidable total, but not altogether surprising, having regard to the position of Sussex and the varying types of habitat available for birds. Wherever one opens a volume the impression given is of an assiduous worker who has included everything that has ever been recorded of birds in Sussex. In spite of the many systematic bird-books now available, Mr. Walpole-Bond is not afraid of giving detailed descriptions of many species, and he writes brilliantly on habits, songs, cries, etc. To many readers the most interesting part of the work will be the numerous entries relating to migration. These are given under the species concerned and are a very noteworthy contribution to our knowledge of bird movements. The coloured plates by Mr. Rickman are a sheer delight. We hope that some day this gifted artist will give us a complete set of pictures of British birds. In the plates before us we find wonderful accuracy combined with consummate artistry. The volumes are tastefully bound in dark brown buckram, and the printing throughout is excellent.

The Naturalist's Calendar. Edited by **Phyllis Barclay-Smith** and **Rudolf Zimmermann**. Published by M. C. Forrester, 3/6. A year ago it gave us very great pleasure to welcome **The Naturalist's Calendar** for 1938, and any reader who had the good fortune to become a possessor of a copy will appreciate that it is very high praise to say that the 1939 edition is at least as good as its predecessor. The Editors have once again secured a magnificent series of nature photographs, sixty in all, and they are very well reproduced. All aspects of natural history are dealt with and every picture is worth a permanent place in the naturalist's portfolio.

The Flight of Birds by **C. Horton-Smith**, pp. 182 with 17 plates and 30 figures. Witherby, 7/6. This is a most useful and timely account of a subject which is very much to the fore among naturalists at the present time. Bird anatomy in so far as it affects flight is discussed at length and wing structure and mechanism is treated clearly and in a most readable manner. The author gives a very clear exposition of the facts relating to the actual velocity of the flight of birds. Measurement of such velocities when the air itself is moving is no easy matter, but Mr. Horton-Smith has some valuable suggestions under this head which should be most useful to serious observers. It is interesting to read that most birds have air speeds ranging from 20 to 60 miles an hour, while swifts have been known to reach a speed of 100 miles per hour. Where long flights are accompanied in very short times, explanation is to be found in wind direction and velocity. The 'slotting' and 'notching' of the wings of birds due to their make-up must be looked upon as safety devices. The large number of illustrations are all to the point, and we can strongly recommend the book to all naturalists, young and old.

CLASSIFIED INDEX

COMPILED BY W. E. L. WATTAM

It is not an index in the strictest sense of that term, but it is a classified summary of the contents of the volume, arranged so as to be of assistance to active scientific investigators; the actual titles of papers not always being regarded so much as the essential nature of their contents.

CONTRIBUTORS

- Ainsworth, G., 326
 Alexander, W. B., 75-76, 253
 Allen, Rev. M. Yate (Appendix) Circ. III
 Barnes, M. D. (Appendix) Circ. III, 239, 286-288, 336-337
 Bayford, E. G., F.R.E.S. (Appendix) Circ. III, 254-256, 287, 288
 Bedford, T. H. B., M.Sc., M.B., M.R.C.P., 86, 189-195, 274
 Bevan, D. W., 75, 322
 Bisat, W. S., F.G.S. (Appendix) Circ. IV
 Boycott, Prof. A. E., 135-136
 Booth, H. B., F.Z.S., 29-32, 73, 143, 226, 231, 292
 Bramley, W. G., 221-225, 235-236, 242-244, 311, 328
 Britten, H., F.R.H.S., 23, 72, 84, 129-130, 199-200, 333-335
 Brown, J. M., B.Sc., F.L.S., F.R.E.S., 38-41, 71, 82, 87-92, 144, 197-198, 201-206, 225, 259, 260-265, 279-285, 306, 315-319
 Burrell, W. H., B.Sc., 268, 271-273
 Butterfield, R., F.R.E.S., 42-43, 73
 Cheetham, C. A., 24-49, 50-52, 55-56, 101-108, 125, 157-164, 213-220, 233-236, 237-244, 266-268, 271-273, 277-278, 323-324, 337 (Appendix) Circs. I to VI
 Chislett, R., F.R.P.S., M.B.O.U., 258-259, 287-288, 288-292
 Clark, J. E., 311
 Clarke, W. J., F.Z.S., 28-29, 34-36, 127-128, 136, 200, 250, 270, 307-311
 Cowin, W. S., 259
 Crookall, R., D.Sc., Ph.D. 301-305
 Dearing, E., 238, 288, 291
 Dibb, J. R., 41-42
 Falconer, Wm., F.R.E.S., 333-335
 Fearnley, W. F., 276
 Fisher, S. D. P., 49
 Flintoff, R. J., F.L.S., F.Z.S., 328
 Fordham, W. J., M.R.C.S., L.R.C.P., D.P.H., 41-42, 95-98 (Appendix) Circs. I, II, III, V
 Fortune, R., F.Z.S., F.R.P.S. (Appendix) Circ. I, 276
 Gallwey, Miss E., 25-28
 Garnett, R. M., 133-135 (Appendix) Circ. II, 237, 327
 Hemingway, Dr. J. E. (Appendix) Circ. II
 Grainger, J., Ph.D., B.Sc., 65-70
 Gray, R. W., 145-153
 Hardy, Eric, F.Z.S., 173-178
 Highfield, E. G. (Appendix) Circ. II, 230-231
 Hilary, Miss D., B.Sc., 47-48
 Hincks, W. D., M.P.S., F.R.E.S., 286-287, 288, 288-289
 Hyde, G. E., F.R.E.S., 93-94
 Jukes, H. R., 137-143
 Lind, Miss Edna M., 244
 Longbottom, M., 144
 Lord, J., M.Sc., 326
 Marriner, T. F., 326-327
 Mason, C. W., 36-37, 290
 Matheson, C., M.A., B.Sc., 251-253
 Milsom, F. E., B.Sc., 48-49, 171-172 (Appendix) Circ. I, 234-235
 Morehouse, Mrs. E. M., 37-38 (Appendix) Circ. III, 210, 237-238, 266, 288-290, 311-312
 Parker, T. Hyde-, 77-81, 314
 Pearce, Rev. E. J., 287
 Pearsall, W. H., D.Sc., F.L.S., 57-64 (Appendix) Circ. I, 247-249
 Peck, A. E., 180, 313-314
 Petch, T., B.Sc., 81-82, 115-118
 Procter, C. F. (Appendix) Circ. IV, 290

CONTRIBUTORS—*continued*

Raistrick, A., PH.D., M.Sc., F.G.S.,
119-125
Ridgewick, Charles, 65-70
Rob, Miss C. M., 240, 276
Robinson, A. E., 325-326

Sheard, G., 48-49 (Appendix) Circ. IV
Sheppard, Thos., M.Sc., F.G.S., F.Z.S.,
1-23, 109-114, 126, 265-171, 182-
183, 207-208, 245-246, 269-270, 275
Sledge, W. A., PH.D., 46-47 (Ap-
pendix) Circ. I, 291-292
Smith, S. H., J.P., F.Z.S., 32-34, 71,
81
Smith, A. Malins, M.A., 266-268
Stainforth, T., B.A., B.Sc. (Appendix)
Circ. IV
Sutcliffe, F., 179-180

Tracy, N., M.B.O.U., 76
Taylor, E. W., 154-155, 320-321
Thomas, Miss Ivy P., 238

Utley, John P., B.Sc., 53-55, 83-84
195, 233-234, 292

Versey, H. C., D.Sc., F.G.S., 227-229
(Appendix) Circ. V

Walsh, G. B., B.Sc., 71, 185-187 (Ap-
pendix) Circ. II, 238-239

Wattam, W. E. L., 181-182, 183-184
(Appendix) Circs. II, III, IV, V,
208-209, 234-235, 241-242

Wilson, Albert, F.L.S., F.R.MET.SOC.
(Appendix) Circ. V

Wilson, A. K. (Appendix) Circ. IV

BOOK NOTICES**ARACHNIDA**

Arachnides de France, Tome VI, 99

BIOLOGY

Ellis, Rev. R. A., and Ellis, A. E.,
M.A.—New Biology Wall Charts,
184
Foott, H. G.—Biology Test Papers,
339
Strausbaugh and Weiner.—General
Biology, 339

BIRDS

Atkinson, Robt.—Quest for the
Griffon, 338
Beetham, G. E.—Fact and Fancy, 278
Darlings, F. F.—Bird Flocks and the
Breeding Cycle, 226
Gordon, Douglas.—The Pageant of
Wings, 322
Gordon, Seton.—Wild Birds in
Britain, 211
Horton-Smith, C.—Flight of Birds,
339
Kearton, Cherry.—My Woodland
Home, 210
Kelly, R. B. T.—The Way of Birds, 74
Lewis, Ernest.—In Search of the
Gyr-Falcon, 278
Nicholas, W. W.—A Sparrow-hawk's
Eyrie, 74.
Robertson, A. W. P., and Powell,
R. D.—Bird Watching Days, 211
Taverner, P. A.—Birds of Canada, 210
Walpole-Bond, J.—Sussex Birds, 340

Williamson, K., and Tunnicliffe
C. F.—The Sky's Their Highway, 74
Witherby, H. F.—Handbook of
British Birds, 100, 339

COLEOPTERA

Browne, F. Balfour.—British Aquatic
Coleoptera, 338

FISH

Savage, R. E.—Food of North Sea
Herring, 73
Wells, A. L.—Tropical Fishes, etc., 75

FLOWERING PLANTS

Hardy, R. Gaythorne.—Wild Flowers
in Britain, 338
Holman, R. M., and Robbins, W. W.
Text-book of General Botany, 339
Hort, Sir Arthur.—The Critical
Botanica of Linnaeus (Ray Society),
187
Stokoe, W. J.—Trees and Shrubs of
the British Isles, 187
Wilson, Albert.—Flora of Westmor-
land, 188

GEOLOGY

Trueman, Prof. A. E.—Scenery of
England and Wales, 131

HYMENOPTERA

Bee Keeping, 99

BOOK NOTICES—continued

LEPIDOPTERA

Stokoe, W. G.—British Butterflies, 131

MAMMALIA

Nicholas, M.—British Wild Animals, 155

ORTHOPTERA

Uvarov, B. P., and Milnthorpe, Miss W.—Locust Outbreaks in Africa and Asia, 1936, 100

SOCIETIES' REPORTS, TRANSACTIONS, etc.

Liverpool Geological, 155
Ray Society (The Critica Botanica of Linnaeus), 187
Yorkshire Geological, 196

MISCELLANEA

Coston, H. E. T.—Beneath the Surface, 184
Godfrey, A. S. T.—The Cradle of the North Wind, 278
Kenyatta, Jomo.—Facing Mount Kenya, 322
Kermack, W. D., and Eggleton, P.—The Stuff we're made of, 338
Mellanby, H.—Animal Life in Fresh Water, 338
Naturalists' Calendar, 1939, 340.
Parham, H. J.—Nature Lover in British Columbia, 131
Pressly, I. P.—A York Miscellany, 211
Roughley, T. C.—The Great Barrier Reef, 99, 131
Tompkins, H. W.—Companion into Essex, 210

ILLUSTRATIONS

ARCHÆOLOGY

Anglo - Saxon Cemeteries, Objects found therein, 3, 7, 9, 11, 13, 15, 17, 109, 113, 165, 167, 168, 169
Copper Spearhead in Hull Museum, 325
Flint Daggers found at Kilnwick and Scunthorpe, 269

BOTANY

Plant Ecology in Yorkshire, Graph Illustrations, 57, 61

FUNGI

Rust Fungi, 65, 67

GEOLOGY

Elf-Dart, 207

Holmpton Coast-line, 275
Map of Speeton Pre-Glacial Shell Bed, 227
Mineral Deposits, Settle - Malham District, Graph Chart, 121
Section from Knowlwood to Henshaw Quarry, Walsden, 179

MOSSES AND HEPATICS

Climacium dendroides, W. and M.

PORTRAITS, VIEWS, AND GROUPS

Clarke, W. Eagle, I.S.O., LL.D., F.R.S.E., Plate II; Austwick Moss Peat Pits, 271
Thomas, Dr. H. Hamshaw, F.R.S., Plate I

**SPECIES AND VARIETIES NEW TO BRITAIN
BROUGHT FORWARD IN THIS VOLUME**

Birds. Otis tetrax tetrax (Western Little Bustard), shot at Wadsworth, Nr. Doncaster, H. B. Booth, 143-144

COUNTIES

CUMBERLAND

Birds.—Albino Birds Notes, T. F. Marriner, 326-327; Mammalia Albino Voles, T. F. Marriner, 327

DERBYSHIRE

Collembola.—Records from Derbyshire Caverns, J. M. Brown, 306

COUNTIES—continued

Mecoptera.—*Boreus hyemalis* L., at Grindleford, J. M. Brown, 144

Neuroptera and Trichoptera.—County records, J. M. Brown, 87-92 ; New Localities for *Osmylus fulvicephalus* Scop., J. M. Brown, 259

DURHAM

Birds.—Rare County Visitors (noted) 327.

ISLE OF MAN

Lepidoptera.—Enquiry for Records, W. S. Cowin, 259

LANCASHIRE

Birds.—Liverpool Records, Eric Hardy, 173-178 ; Lapwing with Unusual Colouration, W. F. Fearnley, 276

Geology.—Millstone Grit between

Knowlwood and Henshaw Wood
Walsden, illustration, F. Sutcliffe
179-180

Mosses and Hepatics.—Bryophyte Association in the Millstone Grit
F. E. Milsom, 171-172

LINCOLNSHIRE

Archæology.—Two rare Flint Daggers found at Kilnwick and Scunthorpe, illustrations, T. Sheppard, 269-270

NORTHUMBERLAND.

Birds.—Rare County Visitors (noted) 327

WESTMORLAND

Mosses and Hepatics.—*Selegeria tristicha*, B. and S., County Records of, T. H. B. Bedford, 274

YORKSHIRE

Amphibia.—Y.N.U. Sectional Report, 1937, E. Gallwey, 27

Algae.—Species noted at Pickering, E. M. Lind, 244

Aphididæ.—*Macrocyphon nigra-campanulæ* Theo. at Whitby, H. Britten, 23

Arachnida.—Further Whitby Records, H. Britten and W. Falconer, 333-335

Archæology.—Anglo - Saxon Cemeteries in East Yorkshire, illustrated, T. Sheppard, 1-23, 109-114, 165-171 ; Large Stone Axe from Scarborough, illustration, T. Sheppard, 245-246 ; Two rare Flint Daggers found at Kilnwick and Scunthorpe, illustrations, T. Sheppard, 269-270 ; Rare Spearhead in the Hull Museum, A. E. Robinson, 325-326

Biology (Freshwater).—Y. N. U. Sectional Report, 1937, J. M. Brown, 38-39

Birds.—Y.N.U. Zoological Section Reports, 1937, H. B. Booth, S. H.

Smith, W. J. Clarke, C. W. Masor 29-37 ; Winter Bird Life by the River Yore, J. P. Utley, 53-55 ; A Contrast in Bird Life, J. P. Utley 83-84 ; Black Grouse near York S. H. Smith, 71 ; Rose-coloured Pastor near York, S. H. Smith, 81 ; Scarborough Notes, W. J. Clarke 127 ; Water Pipit at Pickering (first County Record), R. M. Garnett, 133-135 ; Upper Niddendale Bird Notes, H. R. Jukes 137-143 ; Western Little Bustard (first British Record) at Wadsworth, H. B. Booth, 143-144 ; Black-throated Diver at Oxenhope M. Longbottom, 144 ; Vertebrate Zoology Section Reports, E. W. Taylor, 154-155, 320-321 ; Circular Notes (Appendix), Upper Niddendale, R. Fortune ; Pickering, R. M. Garnett ; Askern, Rev. M. Y. Allen ; Hedon, C. F. Procter ; Goosander on River Yore, J. P. Utley, 195 ; Bird Life on Semei water, February, 1938, J. P. Utley 195 ; Fairburn Swamp and its Avian Problems, W. G. Bramley 221-225 ; Prosecution for Shooting Tawny Owls at Scarborough, H. B. Booth, 226 ; Great Crested Grebe at Malham Tarn, H. B. Booth, 231

YORKSHIRE—*continued*

Species noted at Upper Nidderdale, J. P. Utley, 234-235 ; at Pickering, R. M. Garnett, 237 ; at Hedon, C. W. Mason and C. F. Procter, 290 ; at Sedbergh, J. P. Utley and H. B. Booth, 292 ; Mutilated Gulls on the Yorkshire Coast, W. J. Clarke, 270 ; Probable Breeding of the Crossbill, Nr. Harrogate, R. Fortune, 276 ; Spurn Notes, G. Ainsworth and J. Lord, 326 ; White Stork at Great Ayton, R. M. Garnett, 327

occidæ.—*Antonina bambusae* Mark at Whitby, H. Britten, 84

ollembola.—Winter Species Noted at Sheffield, J. M. Brown, 197-198 ; Species noted at Robin Hood's Bay, J. M. Brown, 206

oleoptera.—Y.N.U. Sectional Report, 1937, W. J. Fordham, 41-42 ; *Hylotrupes bajulus* L. at Riddlesden, Keighley, R. Butterfield, 73 ; Beetles in Bamboo Canes, Whitby, H. Britten, 84 ; County Records, 1937, W. J. Fordham, 95-98 ; Whitby Records, H. Britten, 129 ; Circular Notes (Appendix), Upper Nidderdale, Dr. W. J. Fordham ; Pickering, Dr. W. J. Fordham ; Askern, E. G. Bayford, and Dr. W. J. Fordham ; Hedon, T. Stainforth ; Sedbergh, Dr. Fordham ; Early Sheffield Records (1938), J. M. Brown, 225 ; The late M. L. Thompson's County Records, C. A. Cheetham, 226 ; Species Noted at Pickering, G. B. Walsh and M. D. Barnes, 238-239 ; at Hedon, W. D. Hincks, 288-289 ; Retarded Development : *Hylotrupes bajulus* L., E. G. Bayford, 254-256 ; Species Noted at Sectional Meeting at Askern, W. D. Hincks, E. G. Bayford, and Rev. E. J. Pearce, 286-287

ptera.—Y.N.U. Sectional Report, 1937, C. A. Cheetham, 42 ; Whitby Records, H. Britten, 129 ; Species Noted at Pickering, C. A. Cheetham, 240 ; at Askern, C. A. Cheetham, and W. D. Hincks, 287-288 ; at Hedon, C. A. Cheetham, 288 ; at Sedbergh, C. A. Cheetham, 290-291 ;

County Notes, C. A. Cheetham, 277-279

Decapoda.—Scarborough Records, W. J. Clarke, 128

Ephemeroptera.—Y.N.U. Sectional Report, 1937, J. R. Dibb, 41 ; Species Noted at Robin Hood's Bay, J. M. Brown, 206

Fishes.—Y.N.U. Sectional Report, 1937, E. Gallwey, 27-28 ; W. J. Clarke, 28-29 ; Salmon at Settle, H. B. Booth, 73 ; Scarborough Notes, W. J. Clarke, 127-128 ; Circular Notes (Appendix), Upper Nidderdale, R. Fortune ; Torpedo marmorata (Electric Ray), at Scarborough, W. J. Clarke, 200 ; Rare Marine Captures at Scarborough, W. J. Clarke, 250

Flowering Plants.—Y.N.U. Sectional Reports, 1937, C. A. Cheetham, W. A. Sledge, and D. Hilary, 43-48 ; Soil Types and Plant Ecology in Yorkshire (substance of Presidential Address to Y.N.U., 1937), graph illustrations, W. H. Pearsall, 57-64 ; Supplement to the Floras of the County, by the late Dr. F. A. Lees (edited by C. A. Cheetham), 50-52, 101-108, 157-164, 213-220, 293-300, 323-324 ; Huddersfield District Notes, W. E. L. Wattam, 181-182 ; Notes on Seeds and Seedlings, W. E. L. Wattam, 183 - 184 ; Circular Notes (Appendix), Upper Nidderdale, Dr. W. H. Pearsall, and Dr. W. A. Sledge ; Pickering, E. G. Highfield ; Askern, Rev. M. V. Allen ; Hedon, T. Stainforth, and A. K. Wilson ; Sedbergh, A. Wilson ; Species Noted at Upper Nidderdale, W. E. L. Wattam, 234 ; at Pickering, C. M. Rob, 240 ; at Askern, A. M. Smith, 266-268 ; at Sedbergh, W. A. Sledge, 291-292 ; Plant Associations and Acidity of Some Peaty Pools on Austwick Moss, F. H. Pearsall, 247-249 ; Austwick Moss Peat Pits, Diagram, illustration, W. H. Burrell and C. A. Cheetham, 271-273 ; *Myosotis brevifolia*, C. E. S., at Blubberhouses, C. M. Rob, 276 ; Old

YORKSHIRE—continued

Gormire Records, J. E. Clarke, 311 ;
Botanical Section Annual Meeting,
C. A. Cheetham, 337

Britten, 129 ; Species Noted at
Robin Hood's Bay, J. M. Brown
202-203

Fungi.—Y.N.U. Sectional Report, 1937, G. Sheard, 48-49 ; Ecology of Perennial Rust Fungi, illustrated, J. Grainger, and C. Ridgwick, 65-70 ; New County Records, T. Petch, 81-82 ; *Puccinia graminis* Pers., County Distribution of, W. G. Bramley, 130 ; Species Noted at Upper Nidderdale, W. G. Bramley, 235-236 ; at Pickering, W. G. Bramley, 242-244 ; Foray at Hovingham, Circular Notes (Appendix), G. Sheard ; *Sparassis crispa* at Wigganthrope, W. G. Bramley, 311 ; A *Morchelloid cortinarius* at Whitby, A. E. Peck, 313-314 ; Further Note thereon, W. G. Bramley, 328 ; A Query on *Phallus impudicus*, D. W. Bevan, 322 ; Further Note thereon, W. G. Bramley, 328

Geology.—Mineral Deposits in the Settle-Malham District, illustrated, A. Raistrick, 119-125 ; Scandinavian Boulders Found in East Yorks, T. Sheppard, 126 ; Circular Notes (Appendix), Upper Nidderdale ; Pickering, Dr. J. E. Hemingway ; Sedbergh, Dr. H. C. Versey ; Elf-Darts, illustration, T. Sheppard, 207-208 ; Speeton Pre-Glacial Shell Bed, map illustration, Dr. H. C. Versey, 227-229 ; Note on the Presentation of the J. W. Stather Collection to Hull Museum, T. Sheppard, 246 ; The Coast at Holmpton, illustration, T. Sheppard 275 ; Old Gormire Record of Shap Granite, J. E. Clark, 311

Hemiptera.—Y.N.U. Sectional Report, 1937, J. M. Brown, 39-40 ; Whitby Records, H. Britten, 129 ; Species Noted at Robin Hood's Bay, J. M. Brown, 201 ; Early Sheffield Records (1938), J. M. Brown, 225

Heteroptera.—*Antonina bambusae* Mark. at Whitby, H. Britten, 84 ; Species Noted at Robin Hood's Bay, J. M. Brown, 201-202

Homoptera.—Whitby Records, H.

Hymenoptera.—Y. N. U. Sectional Report, 1937, R. Butterfield, 42 Monomorium pharaonis L. at Scarborough, G. B. Walsh, 71 ; *Gaster Aculeates* at Barmby Moor, W. J. Fordham, 85 ; Circular Notes (Appendix), Askern, E. G. Bayford Ants of Whitby and District, H. Britten, 199-200

Lepidoptera.—Y.N.U. Sectional Report, 1937, R. Butterfield, 42-43 Doncaster District Notes, 1937 G. E. Hyde, 93-94 ; Circular Note (Appendix), Pickering, G. B. Walsh ; Askern, E. G. Bayford and M. D. Barnes ; Distribution of *Phigalia pilosaria* in the Huddersfield District, W. E. L. Wattam 209 ; Early Sheffield Records (1938) J. M. Brown, 225 ; Species Note at Pickering, G. B. Walsh and I. P. Thomas, 238 ; At Hedon E. Dearing, 288 ; At Sedbergh E. Dearing, 291 ; Species Noted at Sectional Meeting at Askern, M. D. Barnes, 286-288 ; Sectional Meeting at Leeds, M. D. Barnes, 336-33

Isopoda (Terrestrial).—*Platyarthrus Hoffmannseggii* Brandt at Whitby H. Britten, 72

Lichens.—Circular Notes (Appendix) Pickering, W. E. L. Wattam Askern, W. E. L. Wattam ; Hedon W. E. L. Wattam ; Sedbergh W. E. L. Wattam ; Species Note at Upper Nidderdale, W. E. L. Wattam, 235 ; at Pickering, H. of Horcum and Mullion Spout W. E. L. Wattam, 241-242

Mammalia.—Y.N.U. Sectional Report, 1937, E. Gallwey, 25-26 W. J. Clarke, 28-29 ; Vertebrate Zoology Section Reports, E. W. Taylor, 154-155 ; 320-321 ; Weight of Rats Captured at Hutton Busce A. E. Peck, 180 ; Circular Notes (Appendix), Askern, Rev. M. Y. Allen ; Hedon, C. F. Procter Depredation by *Mus sylvaticus* ; Kirkheaton, W. E. L. Wattam 208 ; Status of Red and Grey

YORKSHIRE—*continued*

Squirrel in Huddersfield District, W. E. L. Wattam, 208; Weight of Brown and Black Rats, C. Matheson, 251-253; A Rabbit Problem at Reighton, T. Hyde-Parker, 314; Further Note thereon, R. J. Flintoff, 328

lecoptera.—*Boreus hyemalis* L. in Sheffield, J. M. Brown, 82; 144

ollusca (Land and Freshwater).—Y.N.U. Sectional Report, 1937, Mrs. E. M. Morehouse, 37-38; Circular Notes (Appendix), Askern, Mrs. E. M. Morehouse; Notes on the Harrison-Hutton Collection of British Land and Freshwater Mollusca, E. M. Morehouse, 210; Species Noted at Pickering, E. M. Morehouse and E. Dearing, 237-238, 311-312; at Askern, E. M. Morehouse, 266; at Hedon, E. M. Morehouse, 289-290; at Sedbergh, E. Dearing, 291; Molluscs from the Hole of Horcum, E. M. Morehouse, 311-312

osses and Hepatics.—Y.N.U. Sectional Report, 1937, F. E. Milsom, 48; County Records for the Genus *Seligeria*, T. H. B. Bedford, 86; *Tetraxis pellucida* Hedw. Fruit, C. A. Cheetham, 125; Circular Notes (Appendix), Upper Nidderdale, F. E. Milsom; Species Noted at Askern, W. H. Burrell, 268; The Fruiting of *Climacium dendroides* W. & M., illustration, T. H. B. Bedford, 189-195; Species Noted at Upper Nidderdale, F. E. Milsom, 234-235; Moss Associations and Acidity of some Peaty Pools on Austwick Moss, W. H. Pearsall, 247-249; Austwick Moss Peat Pits, diagram illustration, W. H. Burrell and C. A. Cheetham, 271-273

yriopoda—*Scolopendra subspinipes subspinipes* at Scarborough, W. J. Clarke, 136

europtera and Trichoptera.—Y.N.U. Sectional Report, 1937, J. M. Brown, 40; Circular Notes (Appendix); Askern, E. G. Bayford; Species Noted at Robin

Hood's Bay, J. M. Brown, 203-204, 205-206; at Askern, E. G. Bayford, 288; Early Sheffield Records (1938), J. M. Brown, 225; County Records of Trichoptera, J. M. Brown, 260-265, 279-285, 315-319

Orthoptera.—Y.N.U. Sectional Report, 1937, J. M. Brown, 41

Personal Notices.—Portrait of Dr. H. Hamshaw Thomas, F.R.S., President, Y.N.U., 1938, Plate I; Memoriam Notice of Charles Waterfall, F.L.S., 130; J. W. Stather, F.G.S. (T. Sheppard), 182-183; Wm. E. Clarke, I.S.O., LL.D., F.R.S.E., Past President of the Union (T. Sheppard), 256-257; Jasper Atkinson (R. Chislett), 258-259

Plant Associations and Ecology.—Y.N.U. Sectional Report, 1937, D. Hilary, 47-48; Soil Types and Plant Ecology in Yorkshire (substance of Presidential Address to Y.N.U., 1937), graph illustrations, W. H. Pearsall, 57-64; Ecology of Perennial Rust Fungi, illustrated, J. Grainger and C. Ridgwick, 65-70; Ecology at Upper Nidderdale, W. E. L. Wattam, 234; Plant Associations and Acidity of Some Peaty Pools on Austwick Moss, W. H. Pearsall, 247-249; Ecology at Shirley Pool, Askern, A. M. Smith, 267-268; Austwick Moss Peat Pits, diagram illustration, W. H. Burrell and C. A. Cheetham, 271-273; Botanical Section Annual Meeting, C. A. Cheetham, 337

Plecoptera.—Y.N.U. Sectional Report, 1937, J. M. Brown, 40-41; Species Noted at Robin Hood's Bay, J. M. Brown, 204

Psocoptera.—Y.N.U. Sectional Report, 1937, J. M. Brown, 40; New County Records, J. M. Brown, 71

Reptilia.—Y.N.U. Sectional Report, 1937, E. Gallwey, 27; Adders in Upper Nidderdale, H. R. Jukes, 138; Circular Notes (Appendix), Upper Nidderdale, R. Fortune

YORKSHIRE—continued

Siphonaptera.—Whitby and District Records, H. Britten, 72; County Records, G. B. Walsh, 185-187

Thysanura.—Species Noted at Robin Hood's Bay, J. M. Brown, 206

Societies.—Centenary of Yorkshire Geological Society, 196

Zoology (Micro).—Circular Notes (Appendix), Askern, Rev. M. Y. Allen

Yorkshire Naturalists' Union.—Annual Report, 1937, C. A. Cheetham and S. D. P. Fisher, 24-49; Portrait of Dr. H. Hamshaw Thomas, F.R.S., President of the Union, 1938, Plate I; Soil Types

and Plant Ecology in Yorkshire Presidential Address, 1937, graph illustrations, W. H. Pearsall, 57-64; Supplement to the Flora of the County, by the late Dr. F. A. Lees (Edited by C. A. Cheetham), 50-52, 101-108, 157-164, 213-220, 293-300, 323-324; Vertebrate Zoology Section Reports E. W. Taylor, 154-155, 320-321; Excursion Circulars I to VI, C. A. Cheetham (Appendix); Excursion Reports, Upper Nidderdale, 233-236; Pickering, 237-244; Askern 266-268; Hedon, 288-290; Sedburgh, 290-292; Entomological Section Meeting at Askern, M. D. Barnes, 286-288; at Leeds, M. D. Barnes, 336; Botanical Section Annual Meeting, C. A. Cheetham, 33

MISCELLANEA

Birds.—Rook Problems, T. Hyde-Parker, 77-81; The Starling, 329-332

Archæology.—Stone Axes and Arrow Heads in Folklore, W. J. Clarke, 307-311

Correspondence.—A Question of Nomenclature, D. W. Bevan, 75; Reed-Warbler, Information Required, W. B. Alexander, 75; Food of Birds of Prey, Information Required, N. Tracey, 76; Bird Song Inquiry, W. B. Alexander, 253; Manx Lepidoptera, Records of Required, W. S. Cowin, 259; A Rabbit Problem, T. Hyde-Parker, 314; Further Note thereon, R. J. Flintoff, 328; A Morchelloid cortinarius, W. G. Bramley, 328

Flowering Plants.—Notes on Seeds and Seedlings, W. E. L. Wattam, 183-184; Plants in Time of Drought, E. G. Highfield, 230-231

Fungi.—The Genus *Hypoxylon*, T. Petch, 115-118; A Query on *Phallus impudicus*, D. W. Bevan, 322

Geology.—Elf-Darts, illustration, T. Sheppard, 207-208; The Correlation of the Coal Measures in North Wales, R. Crookall, 301-305

Magazine Notes.—64, 70, 76, 100, 131-132, 156, 180, 188, 196, 211-212, 232, 253, 268, 275, 278, 305, 314, 328, 332

Mammalia.—Attributes of Whales, R. W. Gray, 145-153; Weight of Black and Brown Rats, C. Matheson, 251-253

Mollusca (Freshwater).—Effect of Zinc in Water upon *Limnæa peregrina*, A. E. Boycott, 135-136

Museums.—The Ideal Curator, 31

Personal Notices.—Award of D.S. conferred on Mr. Hans Schlesch, 12

CORRIGENDA

Page 241, starred species should be omitted and placed at commencement of listed species on page 242.

„ 260, line 44, for 'G. L. Mosley' read 'S. L. Mosley.'

„ „ line 45, for 'Kilun-Curland' read 'Kilner-Crosland.'

„ 262, line 4, for 'Shipley Mill Dam' read 'Shepley Mill Dam'; also throughout.

„ 265, line 56, for 'Meltham' read 'Melthum.'

Yorkshire Naturalists' Union.

President :

H. HAMSHAW THOMAS, M.B.E., F.R.S., M.A., Sc.D., F.G.S., Cambridge.

Hon. Secretary :

CHRIS. A. CHEETHAM, F.R.E.S., Austwick, *via* Lancaster.

Hon. Treasurer :

S. D. PERSY FISHER, Sackville Street, Leeds.

Divisional Secretary :

RILEY FORTUNE, F.Z.S., 8 West Cliffe Terrace, Harrogate.

The 409th Meeting

WILL BE HELD AT

Ramsgill, Upper Nidderdale

On Saturday, May 14th, 1938

HEADQUARTERS.—Yorke Arms, Ramsgill.

TRAVEL FACILITIES.—

RAIL.

	a.m.	a.m.	p.m.	p.m.
Harrogate	9-5	10-55	12-22	2-27
Pateley Bridge	9-45	11-29	12-56	3-1
Pateley Bridge			5-27	8-8
Harrogate			6-7	8-39

BUS TIMES.

	a.m.	a.m.	a.m.	a.m.	a.m.	p.m.
Harrogate (Victoria Avenue)	8-15	9-15	10-15	11-15	11-45	12-15
Pateley Bridge	9-10	10-10	11-10	12-10	12-39	1-10
Pateley Bridge	9-15	10-15		12-15		1-15
Wath	9-21	10-21		12-21		1-21
Ramsgill	9-33	10-33		12-33		1-33
Ramsgill	4-52		6-37	8-12		
Wath	5-4		6-49	8-24		
Pateley Bridge	5-15		6-55	8-30		
Pateley Bridge	5-45	6-15	7-15	8-30	9-15	
Harrogate	6-39	7-10	8-10	9-25	10-10	

The party will leave the bus at Wath, 10-21 a.m., and walk from there up the Nidd and Gouthwaite Reservoir (both sides) to investigate the shores of the reservoir and the gills and woods on the way to Ramsgill.

MAPS.—Pateley Bridge to the head of the reservoir is on Sheet 26 of the one-inch large series, and Ramsgill and the upper end of the dale on Sheet 20 of the same series.

BOOKS.—Members will be well advised to read Joseph Lucas's *Studies in Nidderdale*, the second part consists of a glossary; *The Dialects of Nidderdale*; this is full of interest when the derivation of local place-names or words in common use amongst the local folk are in question.

In *The Naturalist* for 1886 there is a paper on "Upper Nidderdale and its Fauna," by W. Eagle Clarke, W. Denison Roebuck, and William Storey, which has full lists of the mammals, birds, and fishes and also of the Mollusca and Lepidoptera, though notes on other orders of insects are scanty.

The district is dealt with by F. Arnold Lees in the *Flora of West Yorkshire* and the same author has a note on it in Davis and Lees's *West Yorkshire*. The geologist will find information in Kendall and Wroot, *The Geology of Yorkshire*. Dr. H. C. Versey wrote a note for the Middlesmoor Circular, June, 1923, but this deals with the part of the dale higher up than Ramsgill. Dr. R. G. S. Hudson reported on this meeting in *The Naturalist*, 1923, p. 306, and as some members may wish to spend more time in the district we have extracted the following:—

'Attention was mainly paid to three points. The nature of the junction of the Millstone Grit with the Yoredale series, the horizons of the Yoredalian beneath the Millstone Grit at Scarhouse, Limley, and Lofthouse, and the varying lithological facies of the Yoredale series compared with the same horizon to the west and north-west. Clean sections of the Millstone Grit enabled us to see the passage of a grit of the coarse, pebbly variety into a fine grit not distinguishable from the grits of the Yoredale series. The junction of the Millstone Grit and the Yoredale was plainly marked, there being no suggestion of a passage from the one to the other. The irregular base of the shale, the lowest bed of the grit, was very noticeable when compared with the regular bedded shales of the Yoredales just below, the suggestion being rather that of an unconformable junction. No fossils of zonal importance were found in the underlying shales and limestones of the Yoredales, but comparison with Limley suggested the correlation of this horizon with that of the Scar Limestone in Teesdale and the Middle Limestone of Wensleydale and Wharfedale.

'The normal facies of this horizon is one of limestone with rare interbedded shales. Here this same horizon is one of shale with thin limestone showing, as in other districts, the change of facies of the Yoredalian from west to east is from a limestone to a shale with limestones. At Limley, below a similar series of limestones and shales, lower horizons are exposed. The bed immediately below contains fossils characteristic of the Cockle Shell Limestone of Teesdale and the middle horizon of the Middle Limestone of Wensleydale and Wharfedale. The Millstone Grit conditions come in much earlier here than elsewhere in the north of England or, as is more probable, there is a definite unconformity of the Millstone Grit on the Yoredalian with the grit resting here on beds as low as anywhere.'

In *The Geology of Yorkshire* the area we are to work is suggested to give 'an excellent opportunity for the study of the character of the successive strata of Millstone Grit. In this area the published maps are seriously in error, for that which is called the Main Grit of the Kinderscouts does not descend the hillside and cease above Ramsgill as is shown on the map, but the outcrop is continued contourwise round the hills and reappears in Ramsgill and Gouthwaite. The glacial drift is also of interest, though the story it should tell has not been definitely made out. It is clear that there has been the passage of a large body of ice over the high moorland above Colthouse, for we have found there as erratics fragments of the Cayton

Gill beds. Gouthwaite Reservoir is upheld mainly by a terminal moraine of the Nidderdale glacier.'

Mr. Riley Fortune writes :—**MAMMALS.**—The usual list of Mammals common to our Yorkshire Dales will be found here, including Badger and several species of Bats.

BIRDS.—Birds which are numerous follow the usual moor and dales types. The most noticeable being Woodcock, Sandpiper, Snipe, Redshank, Dipper, Grey and Yellow Wagtails, Wood Wren, Redstart, and, on the moors, Dunlin and Merlin. Gouthwaite Reservoir harbours, especially in winter, many species of Ducks of which the Shoveller, Mallard, and Teal breed on the moors and about the reservoir Tufted Duck, and the Great Crested Grebe, also Mute Swans in a wild state ; formerly the Ring Plover nested, but they have been absent for some years ; nevertheless, a good look out should be kept for them.¹ Osprey occasionally frequent the reservoir for some time in the winter months.

FISH.—Trout are numerous, Gudgeon, Miller's Thumb, Minnow, and Loach are plentiful and, especially in the reservoir, there are some large Grayling.

REPTILES.—Adders are common, Grass Snakes are rare. The Common Lizard and Slow Worm are present, also Frogs and Toads, but I do not remember seeing any Newts.

BOTANY.—Dr. W. H. Pearsall wrote a report on the botanical features of the area visited in 1923. He states :—' The ground flora of the woods was very mixed throughout. The limestone types were either chiefly *Mercurialis* and *Allium ursinum* or else a mixture in which *Geranium Robertianum*, *Oxalis*, *Cardamine flexuosa*, *Crepis paludosa*, *Climacium dendroides*, *Hypnum commutatum*, and *Chrysosplenium alternifolium* were often noticeable. In the grit woods, the ground flora was chiefly *Holcus mollis*—*Deschampsia flexuosa* with or without *Pteridium* or a community of ferns—*Mnium hornum* and *Scilla nutans*. The ferns included the male and lady ferns, the Beech, Oak, and Hard ferns. They are fairly representative of the main types of gill woodlands.'

In *West Yorkshire*, p. 295 (1878), F. Arnold Lees writes :—' Few rare plants have been recorded. The florula is of the usual gritstone character. *Mimulus guttatus* has naturalised itself by the stream in a lonely situation near Rams Gill, and *Primula farinosa* is reported from Lofthouse. For the rest, the following includes the more interesting species that grow in the district from the north-eastern slope of Great Whernside to Dallow Gill : *Trollius europæus*, *Polygala depressa*, *Orobis tenuifolius*, *Rosa mollissima*, *Rubus Chamæmorus*, *Vaccinium Vitis-Idæa*, *Trientalis europæa*, *Pinguicula vulgaris*, *Empetrum nigrum*, *Polamogeton ericetorum*, *Lycopodium Selago*. In addition to these Lucas records several species including *Arctostaphylos uva-ursi* on Little Whernside and Great Wham. This latter would be an interesting plant to rediscover for any one staying a longer time in the district. *Trientalis*, which we saw in two or three places near Pateley in 1919, may be in some of the gills to be visited.'

Dr. W. A. Sledge adds :—There is a record for *Carex divisa* in 'Lees' Flora' at Rams Gill but the plant was almost certainly *C. disticha* or some other species.

MOSES AND HEPATICS.—F. E. Milsom writes :—' The upper and lower ends of Nidderdale, starting from Pateley Bridge, represent different types of country from the bryological point of view. This may be exemplified by quoting the flora bordering two streams. At the lower end, Ravens Gill—once private but now more or less public—is in typical

¹ Black-headed Gulls frequent the head of the reservoir, in the nesting time, but so far I have no record of their nesting. Look-out should be kept for them.

Millstone Grit country, and contains such typical species as *Plagiothecium undulatum* B. and S., *Lepidozia reptans* (L.) Sum., *Apholozia media* Lindb., etc. It is also one of the only two Yorkshire stations for *Jubula Hutchinsiae* (Hook.) Sum., and among other interesting hepatics is a form of *Eucalyx hyalinus* (Lyell) Breidl., with enormous cells. The gill should form a good hunting ground for the extremely rare *Aplozia lanceolata* (Schrar.) Sum., which has not turned up in the county for many years.

'How Stean, at the upper end, is a typical limestone gorge. The more interesting among the usual species to be found in such a habitat are *Seligeria Doniana* C.M., *S. tristicha* B. and S., *Eurhynchium Teesdalei* Schp., *Pedinophyllum interruptum* (Ness) Pears., and its var. *pyrenaicum* (Spruce) Kaal.

COLEOPTERA.—Dr. W. J. Fordham writes :—'The following beetles have occurred in the neighbourhood of Pateley Bridge and Middlesmoor : *Carabus nitens*, *Leistus rufescens*, *L. fulvibarbis*, *Elaphrus cupaeus*, *E. riparius*, *Clivina fossor*, *Nebria gyllenhali*, *Bombidion dentellum*, *B. atrocoeruleum*, *Pterostichus anthracinus*, *Agonum marginatum*, *Atheta atricolor*, *Dianous coeruleus*, *Antherophagus nigricornis*, *Apion cruentatum*.'

MEETING.—Tea at Headquarters, Yorke Arms, Ramsgill. Tea at 5-30 p.m. Plain tea, 1/6. Meat tea, 2/6. General meeting for reports and election of new members at 6 p.m. Nominations for new members will be very welcome.

The next meeting will be at Pickering, June 4th-6th, 1938.

YORKSHIRE NATURALISTS' UNION.

For particulars apply to

The Hon. Secretary, Austwick, via Lancaster; or to the Hon. Treasurer, S. D. Persy Fisher, Sackville Street, Leeds.

.....19

.....[Signature and Titles.]

.....[Address.]

wishes to become a member of the Yorkshire Naturalists' Union, and will subscribe FIFTEEN SHILLINGS (15/-) per annum until the end of the year in which written resignation is given.

Members are entitled to receive 'The Naturalist' and all other current publication of the Union, free.

} [Signature
cf Proposer
and
Seconder.]

Yorkshire Naturalists' Union.

President :

H. HAMSHAW THOMAS, M.B.E., F.R.S., M.A., Sc.D., F.G.S., Cambridge.

Hon. Secretary :

CHRIS. A. CHEETHAM, F.R.E.S., Austwick, *via* Lancaster.

Hon. Treasurer :

S. D. PERSY FISHER, Sackville Street, Leeds.

Divisional Secretary :

G. B. WALSH, B.Sc., Linthorpe, Stepney Drive, Scarborough.

The 410th Meeting

WILL BE HELD AT

PICKERING

On Saturday, JUNE 4th, 1938
to Monday, JUNE 6th, 1938

HEADQUARTERS.—The White Swan Hotel, Pickering. Proprietor : Mr. T. A. Hirst. Terms : 10/6 per day for Bed and Breakfast, Sandwiches to take out, and Dinner in the evening. As some of the bedrooms are double-bedded, it will assist if members prepared to share rooms will state this when making application ; rooms outside will be available if members will write in good time. Meet each day at 11 o'clock.

TRAVEL FACILITIES.—Pickering is well served with buses from Whitby, Malton and Scarborough, and by train on the Malton and Whitby line :

Trains—		a.m.	a.m.	p.m.	p.m.	p.m.	p.m.
Malton ...		9-40	10-42	1-25	2-18	3-25	5-55
	<i>Sat. only.</i>			<i>Sat. only.</i>	<i>Sat. only.</i>		
Pickering ...		9-58	11-1	1-42	2-38	3-45	6-14

And Scarborough and Pickering line :

Scarborough	8-40	11-10	1-20	4-0	6-23	8-45
Pickering ...	9-29	11-59	2-9	4-48	7-10	9-32

BUS TIMES.—Service 128.

Scarborough to Pickering :

	a.m.	a.m.	p.m.	p.m.	p.m.
Scarborough	8-30	10-45			
Pickering	9-30	11-45			
<i>Return—</i>					
	p.m.	p.m.			
Pickering	4-45	5-45	6-45	8-0	9-0
Scarborough	5-45	6-45	7-45	9-0	10-0

Helmsley to Pickering.

	a.m.	a.m.	
Helmsley	8-30	10-40	12-55
Pickering	9-20	11-30	1-45
<i>Return—</i>			
	p.m.	p.m.	
Pickering	3-45	5-30	8-0
Helmsley	4-35	6-20	8-50

Malton to Pickering.

	a.m.	a.m.	a.m.
Malton	8-35	9-40	11-20
Pickering	9-0	10-5	11-45
<i>Return—</i>			
	p.m.	p.m.	
Pickering	4-45	6-45	
Malton	5-10	7-10	

BOOKS AND MAPS.—Sheet 22 of the 1-inch Large Series Ordnance Survey covers the area. Baker's *North Yorkshire* and Kendall and Wroot's *Geology of Yorkshire* deal with the district; reports of a previous meeting may be found in *The Naturalist*, 1929, pp. 277-282, 313-316, 345-347.

EXCURSIONS.—**Saturday**—Hole of Horcum, where the party will be led by Mr. R. J. Flintoff, F.L.S., to see *Cornus Suecica* and *Trientalis europæa*. Then to Cross Cliff, where the party will be led by Mr. E. G. Highfield. This district will be interesting to geologists, botanists, and entomologists. Return may be made by bus from Saltersgate or *via* the Bridestones and Staindale to the 'Fox and Rabbit,' where a bus can be caught, or down to Thornton Dale. In the evening, Mr. R. J. Flintoff, F.L.S., will read a paper on 'Reflections on the Fall of the Leaf from the Beech and Oak in Autumn.'

Sunday.—A visit will be paid to the Watercress beds and to the marshy tracts by the River Costa.

Monday.—The entomologists will go direct to Haugh Rigg under a leader, while the botanists and geologists will go to the quarries for plants and fossils and so to Haugh Rigg.

Mr. S. H. Smith, F.Z.S., writes :—The Yorkshire Naturalists' Union are invited to visit the Keld Head Fish Hatchery of the Yorkshire Fishery

Board, by permission of that body during Whit week-end, June 4th, 5th, and 6th.

The Hatchery is situated about half a mile south-west of Keld Head, near Pickering, and is shown on Sheet 22 of the 1-inch O.S. map, and it adjoins the well-known watercress beds served by the River Costa, whose products are so popular in the West Riding of Yorkshire.

The Fish Hatchery consists of some eleven ponds, which have been excavated purposely for the rearing of salmon and trout, and it will be possible to see both trout and fry, yearlings and two-year-olds, and also a quantity of young salmon both fry and in the 'parr' stage.

The Board are also conducting experiments in the culture of roach and it may be possible at this date to see roach ova during the hatching process.

It is expected that Mr. Hartley, the Naturalist of the British Freshwater Biological Association, will be at Keld Head during late May and early June, in which event the members of the Biological section of the Y.N.U. will have a much greater interest.

The Hatchery keeper, Mr. J. Paton, has had many years experience in the rearing of salmon and trout, and he will have pleasure in describing the work of the Yorkshire Fishery Board at the Hatchery under his care.

GEOLOGY.—Dr. J. E. Hemingway writes:—The market town of Pickering lies on the east-west fault which separates the Tabular Hills to the north from the low-lying Vale of Pickering to the south. North of the town the Corallian Series, a thick group of limestones and calcareous sandstones, extend to the edge of the bold escarpment above Saltersgate which faces north across the Cleveland Moors. These rocks dip gently southwards and are exposed in a number of quarries from which wallstone and limestone for burning were formerly won. The upper part of the series is best seen in the quarries three-quarters of a mile north of Pickering, where the following succession may be readily observed: Upper Calcareous Grit with *Lucina aspersa*, *Chlamys fibrosa* and *Exogyra nana*; Osmington Oolites with *Pseudomelania heddingtonensis* and *Nucleolites scutatus*; Middle Calcareous Grit with *Trigonia hudlestoni*, *Chlamys fibrosa*, *Exogyra nana*, *Gervillia aviculoides* and *Pseudomelania heddingtonensis*.

The underlying limestones of the Hambleton Oolites are seen in quarries six miles along the Whitby road, while the lowest sub-division of the Corallian, the Lower Calcareous Grit, has a wide outcrop on Lockton Low Moor and caps the east-west escarpment at Saltersgate.

Along the lower part of this scarp the soft Oxford Clay occurs but is rarely exposed. It is underlain by the Kellaways Rock, a group of poorly fossiliferous sandstones which form much of the low land near Saltersgate; this is well exposed in the small northerly-flowing stream which has been artificially deepened to drain the surrounding farm lands. Here the underlying fossiliferous Cornbrash is also seen forming a small waterfall and prominent adjacent crags. The Upper Estuarine Series are the lowest rocks in the area under review and occur at the foot of Cross Cliff, exposed by the eastward-flowing Grain Beck.

The Hole of Horcum is one of the most striking physical features in Yorkshire. This vast basin, two miles in circumference and 300 feet deep, is cut through the Lower Calcareous Grit and Oxford Clay and is floored by Kellaways Rock. It is drained by a number of small springs which emerge at the top of the Oxford Clay, converge in the bottom of the Hole, and pass westwards through a narrow valley towards Lockton. The usual explanation for the origin of the Hole is that each of the small springs has undercut the overlying rocks, causing their collapse, and by this means slowly enlarging what was a normal valley head to its present bowl-like form.

To the north-west of Saltersgate lies the magnificent gorge of Newton Dale, cut during the Ice Age when the drainage to the north was dammed by ice. Water from the overflowing Lake Eskdale turned south at Goathland, and probably using an old drainage line, carved in Newton Dale the type example of a direct overflow channel. Through that gorge the melt waters poured into Lake Pickering, which in Pleistocene times extended from Brompton to Helmsley and Gilling and south to Malton and the Wolds edge, and deposited their load of boulders and gravel to form a considerable delta, upon which part of Pickering is built.

The lake muds and silts almost completely obscure the downfaulted Kimmeridge Clay to the south of Pickering, where, particularly towards the east they have accumulated to sufficient thickness to build above sea-level an area which was pre-glacially a gulf of the sea. Lake Pickering persisted, though shrunk in size and reduced in depth, long after the ice had retreated, as is evidenced by the Late Bronze Age lake dwelling excavated at Costa Beck, near Pickering. Marshy conditions continued well into historic times and would rapidly return if the present artificial drainage was neglected.

BOTANY.—NOTES ON FLOWERING PLANTS AND FERNS.—Mr. E. G. Highfield writes :—Dwarf cornel and trientalis are found in the Hole of Horcum. In the Haugh Woods, columbine, lily of the valley, herb paris, and bird's nest orchid may be expected. In the old limestone quarries the following orchids are known : butterfly, frog, fly, bee, pyramid, and burnt tip. On the Carr, near the Costa, there are bog bean, water violet, and water crowfoot.

Of ferns, mountain buckler is plentiful on the high moorlands, also adders tongue and moonwort in grassland near to heather. Common polypody, oak fern, beech fern, and brittle bladder fern are found in the griffs on the moors. Hartstongue, black spleenwort and maiden hair spleenwort are scarce.

LICHENS.—Mr. W. E. L. Wattam writes :—Pickering and its immediate neighbourhood (Levisham Valley, Lockton and Raindale) provide ample scope for the student of this class of plants. Prior to the visit of the Union to Pickering in May, 1929, there appeared to be no records known. I succeeded in listing seventy species and varieties. The result of my work appeared in the report of this excursion in *The Naturalist* for 1929, pp. 314-315. Among the species noted were *Collema pulposum* Ach., *Ramalina farinacea* Ach., *Parmelia sulcata* Tayl., *P. conspersa* Ach., *P. omphalodes* Ach., *Placodium callosporum* Mer., *Pl. flavescent* A. L. Sm., *Pl. aurantiacum* Anzi, *Lecanora cartilaginea* Ach., *L. hageni* Ach., *L. atra* Ach., *L. sordida* Th. Fr., *L. calcares* Sommerf., *Bæomyces rufus* D.C., *Pycnothelia papillaria* Hoffm., *Lecidia sanguinaria* Ach., *Opegrapha atra* Pers., *O. varia* Pers., *Verrucaria migrescens* Pers., and *V. muralis* Ach.

ENTOMOLOGY.—COLEOPTERA.—Dr. W. J. Fordham writes :—The following beetles have been taken in the neighbourhood of Pickering : *Cicindela campestris*, *Cychrus rostratus*, *Carabus nitens*, *C. arvensis*, *Pterostichus adstrictus*, *P. lepidus*, *Tachyporus solutus*, *Oceoptoma thoracicum*, *Nargus wilkini*, *Catops kirbyi*, *Micrurula melanocephala*, *Aphodius constans*, *Longitarsus atricillus*, *Batophila rubi*, *Anthrribus variegatus*, *Apion pallipes*, *Phytonomus arator*, *Anthonomus pomorum*, *A. pedicularius*.

LEPIDOPTERA.—Mr. G. B. Walsh writes :—In Circular 64 (1886). Mr. John Binns says, ' The butterflies are well represented in the district, I have collected 34 species and seen *V. antiopa* and *C. croceus*. *E. cardamines* is common. The fritillaries are in strong force—*A. paphia*, *aglaia*, *cydippe*, *euphrosyne*, *selene*, *E. aurinia*, and *H. lucina* abound generally. All the *Vanessidæ* are met with. *P. ægeria*, *P. megera*, *E. semele*, *M. jurtina*, *N. tithonus* and *A. hyperanthus* are abundant in suitable seasons. *C. tullia* on

the summit of the high watershed. *C. rubi* is the only Hairstreak (but *S. W.-album* doubtless occurs, as it is found at Sinnington, G.B.W.). The Blues, *P. argus*, *E. argiades*, *P. icarus*, *C. minimus* and *C. argiolus*, with the Skippers *E. tages*, *O.* and *A. sylvestris* are plentiful.

The moths have been neglected. The following species have been observed: *I. statice*, *Z. loniceræ* and *Z. filipendulæ*, *S. ocellatus*, *S. populi*, *A. atropos*, *C. elpenor*, *N. stellatarum*, *T. bembeciformis*, *S. tipuliformis*, all the *Hepialidae*, *C. ligniperda*, *C. bicuspis*, *C. furcula*, *N. dromedarius*, *N. ziczic*, *P. tremula*, *D. tremacula*, *D. cæruleocephalus*, *C. reclusa*, *P. bucephalus*, *E. russula*, *P. auriflua*, *A. caja*, *P. plantaginis*, *P. fuliginosa*, *S. menthastri*, *S. lubricipeda*, *H. jacobææ*, *N. rubi*, *N. quercus*, *E. lanestris*, *P. populi*, *O. potatoria*, *S. carpini* with *C. glaucata* among the Sphinges and Bombyces.

In the *Geometers*, *O. sambucata*, *E. dolobraria*, *N. hispidaria*, *A. prodromaria*, *H. abruptaria*, and several of the genera *Boarmia* and *Tephrosia* are common. *A. blomeri*, *A. ulmata*, and about 20 species of the genus *Eupithecia* have been noted. *Melanippe*, *Anticlea*, *Cidaria* and *Eubolia* are well represented. The *Noctuæ* have not been worked at all, but many good things have turned up. *T. batis*, *C. flavicornis*, *P. iota*, *P. interrogationis* have occurred, and the Plume moths are numerous.

ORNITHOLOGY.—Mr. Ronald M. Garnett writes:—Mr. Highfield tells me you want a list of some of the less common birds likely to be seen during the Whit week-end meeting of the Y.N.U. It is not easy for me to make one as I have never been here during the nesting season, and up to now practically none of the summer migrants are well distributed. However you must amend the list where you feel I am obviously wrong.

Saturday.—LOCKTON, LOW MOOR AND HORCUM.—Twite,¹ grey wagtail, ring ousel, wheatear, stonechat, nightjar, merlin, golden plover, curlew, red grouse.

Sunday.—COSTA BECK AND BRICKFIELDS.—Carrion crow, magpie, lesser redpoll, tree sparrow, reed bunting, yellow wagtail,² willow tit,³ grasshopper warbler, sedge warbler, whitethroat, whinchat, common sandpiper, common snipe, redshank,⁴ water rail.⁵

Monday.—NEWBRIDGE QUARRIES AND HAUGH RIGG.—Bullfinch, tree pipit, tree creeper, marsh tit, pied flycatcher, wood wren, garden warbler, lesser whitethroat, redstart, dipper, great spotted woodpecker, turtle dove.

MEETING.—Tea at the White Swan at 6 p.m. Plain 1/3; with meat 2/-. To be followed at 6-30 p.m. by a General Meeting for the presentation of reports on the work done on the excursions and for the election of new members. Trains leave for Scarborough at 7-35 p.m. and for Malton at 7-58 p.m.

The next meeting of the Union will be at Askern, in Vice-County 63, on June 25th, 1938.

¹ The twite is believed to have nested in the Hole of Horcum and should be looked for both here and near Blakey Topping.

² Yellow wagtail is said not to occur, but the locality is typical and it is worth looking for.

³ Willow tit occurs here in autumn and probably nests also.

⁴ Redshanks should be found with young chicks.

⁵ Water rails are common during the winter, and possibly a pair or two remain to breed.

YORKSHIRE NATURALISTS' UNION.

For particulars apply to

The Hon. Secretary, Chris. A. Cheetham, Austwick via Lancaster;
or to The Hon. Treasurer, S. D. Persy Fisher, Sackville Street, Leeds.

This form, when filled up and signed, should be sent to the Hon. Secretary of the Union, accompanied by the amount of the first year's subscription.

The Subscription of 15/- entitles the members to receive the Union's monthly magazine, "The Naturalist," as well as the "Transactions."

Persons related to and resident in the family of a member are admitted as 5/- members, to enable them to attend excursions, but not to receive the publications.

Qualification for Life Membership :—A Donation of 11 Guineas.

Yorkshire Naturalists' Union.

.....I9.....

[Signature and Titles.]

.....

.....[Address.]

☒ wishes to become a member of the Yorkshire Naturalists' Union, and will subscribe
FIFTEEN SHILLINGS (15/-) per annum until the end of the year in which written
resignation is given.

..... } [Signature of
Proposer
and
Seconder.]

Elected.....I9..... at.....

..... Chairman's Signature.

Yorkshire Naturalists' Union.

President :

H. HAMSHAW THOMAS, M.B.E., F.R.S., M.A., Sc.D., F.G.S., Cambridge.

Hon. Secretary :

CHRIS. A. CHEETHAM, F.R.E.S., Austwick, *via* Lancaster.

Hon. Treasurer :

S. D. PERSY FISHER, Sackville Street, Leeds.

Divisional Secretary :

JOHN GRAINGER, B.Sc., Ph.D., Tolson Museum, Huddersfield.

The 411th Meeting

WILL BE HELD AT

ASKERN

for the investigation of Shirley Pool and district

On Saturday, JUNE 25th, 1938

HEADQUARTERS —The Thatched Cottage, Selby Road, Owston. It is the only thatched cottage in the district and stands on the main Doncaster-Selby road, almost opposite to the end of Rushy Moor Lane, where we come out after visiting Shirley Pool. It is about $1\frac{1}{2}$ miles south of Askern Station.

TRAVEL ARRANGEMENTS.—Trains leave Leeds (City) Station for Askern as under :—

Leeds.		Askern.
8-58 a.m.	...	10-5 a.m.
10-55 a.m.	...	11-52 a.m.
1-27 p.m.	...	2-36 p.m.
Returning at 6-18 p.m. and 8-24 p.m.		

Visitors from other parts should proceed to Doncaster and take a bus from North Bridge to Askern. B. & S. busses leave every quarter hour. Some South Yorkshire busses also travel to Askern every hour.

EXCURSION.—Leader, Rev. M. Yate Allen, M.A., of Moss. Meet at Askern Station, 10-20 a.m., and walk to Shirley Pool, which should be reached about 11 a.m. Members joining the excursion later should proceed along Rushey Moor Lane to the Pool. The area under investigation is not large and it should not be difficult to find the party.

Permission has been given by Major E. L. S. Anne to visit any part of the Burghwallis Estate.

BOOKS AND MAPS.—Sheets 32 and 37 of the 1-inch Ordnance Survey and Circulars 103, 196, 239, and 326 may be consulted, and also Lees' *Flora of West Yorkshire* and Kendall and Wroot, *Geology of Yorkshire*. In the report on the 1912 excursion, *Naturalist*, 1912, p. 253, there is a note on the Neolithic earthworks where Major C. Anne had kindly cut trenches for the members' examination, and at this meeting Mr. H. Culpin described some of the strata passed through in the sinking for the colliery.

BOTANY.—The Rev. M. Yate Allen writes :—The following species, among many others, may be in flower or distinguishable on June 25th : *Ranunculus flammula* and *lingua*, *R. sceleratus*, *R. arvensis*, *Polygala vulgaris*, *Cerastium aquaticum*, *Rhamnus catharticus* and *frangula*, *Epilobium palustre* and *tetragonum*, *Circaea lutetiana*, *Lythrum salicaria*, *Oenanthe fistulosa*, *crocata* and *aquatica* (*Phellandrium*), *Galium palustre* and *uliginosum*, *Eupatorium cannabinum*, *Euphrasia officinalis*, *Hottonia palustris*, *Anagallis tenella*, *Rumex Hydrolapathum*, *Daphne laureola*, *Orchis Morio*, *Alisma Plantago*, *Typha angustifolia*, etc.

ORNITHOLOGY.—The following birds have been seen recently in this district : green and great spotted woodpecker, many tits, including coal tit and long-tailed tit, hawfinch, nightjar, redstart, golden plover, redshank, grasshopper, and other warblers, heron, etc.

MICRO-ZOOLOGY.—Shirley Pool is not a good place for the better animalculæ, but the surrounding ponds have provided many interesting finds including : Among Rotatoria : *Megalotrocha velata* and *flavicans*, *Meliceria ringens* (frequent), *Limnias annulatus*, several species of *Floscularia* etc. Among the Infusoria : *Stentor niger*, *coeruleus* and *polymorphus*, *Vaginicola*, *Colthurnia*, *Paramecium*, etc. Also *Volvox*, *Hydra*, etc.

Mr. Yate Allen adds :—There are otters in Shirley Pool and badgers have been caught near it.

ENTOMOLOGY.—Mr. E. G. Bayford writes :—Given favourable weather students of any branch of entomology should be well repaid by a visit to Askern. The district is an easy one to work as the best collecting grounds are within easy reach of its centre, 'the Pool.' The Union has made excursions here on several occasions, in 1886, 1893, 1906, 1912, and 1926. The following is a selection from the fairly long list of insects which have been met with on one or more of these, or are notable records.

COLEOPTERA.

<i>Carabus granulatus</i> L.	<i>Scirtes hemisphæricus</i> L.
<i>Dyschirius globosus</i> Herbst.	<i>Dasytes aerosus</i> Kies.
<i>Laccobius bipunctatus</i> F.	<i>Prasocuris phellandrii</i> L.
<i>Helophorus affinis</i> Marsh.	<i>Chrysomela marginalis</i> Duft.
<i>Gyrophaena manca</i> Er.	<i>Scaphidema metallicum</i> F.
<i>Platystethus arenarius</i> Fourc.	<i>Lagria hirta</i> L.
<i>Proteinus ovalis</i> Steph.	<i>Anaspis Geoffroyi</i> Müll.
<i>Bythinus puncticollis</i> Den.	<i>Dorcus parallelipipedus</i> L.
<i>Dacne humeralis</i> F.	<i>Serica brunnea</i> L.
<i>Cercus rufilabris</i> Lat.	

HYMENOPTERA

Ichneumon confusor Gr.

Glyphicnemis Suffolciensis Morl.¹

NEUROPTERA.

Libellula fulva Müll first discovered in Yorkshire by S. L. Mosley in 1888 at Shirley Pool, and since taken in plenty by Dr. Corbett, has only occurred in our county at this place.

LEPIDOPTERA.

Eupoecilia vectisana Westw. Added to the Yorkshire list by Dr. Corbett who took it freely on Rushy Moor in July, 1897.

COLEOPTERA.—Dr. W. J. Fordham adds :—The following beetles have been taken at Askern mainly in the neighbourhood of Shirley Pool.

Elaphrus cupreus.
E. riparius.
Gyrinus minutus.
Pterostichus oblongopunctatus.
Bembidion rufescens.
B. monticola.
Haliplus confinis.
Hydroporus pictus.
Noteris clavicornis.
Hygronoma dimidiata.
Stenus nigritulus.

Stenus subaeneus.
Homalium punctipenne.
Prognatha quadricornis.
Bryaxis juncorum.
Laemophiloeus ferrugineus.
Psammoechus bipunctatus.
Colon brunneum.
Scaphidium quadrimaculatum.
Cis alni.
C. nitidus.
C. bidentatus.

LEPIDOPTERA.—Mr. M. D. Barnes writes :—This order of insects appears to be very well represented in the Askern District. The most fruitful hunting grounds are the hedgerows and the woods, whilst the vegetation around 'Shirley Pool' should prove a suitable habitat for many interesting insects.

HEDGEROWS.

BUTTERFLIES.—*Euchloë cardamines*, *Vanessa urticae*.

Moths.—*Cosmotriche potatoria*, *Lasiocampa quercus*, *Porthesia similis*. (The larvae of these insects will be found at the time of the excursion.)

WOODS.

MOTHS.—**NOCTUIDAE** : *Calymnia diffinis*, *Acronycta psi*, *A. menyanthidis*, *Drepana falcatoria*, etc. **GEOMETRIDAE** : *Boarmia repandata*, *B. gemmaria*, *Pachys betularia*, *Selenia bilunaria*, *Abraxas sylvata*, *Cidaria corylata*, *C. truncata*, *C. immanata*, *Xanthorhoë montanata*, *X. galiata*, *X. rivata*, *X. sociata*, *Eulype hastata*, *albicillata*, etc.

CONCHOLOGY.—Mrs. Elsie M. Morehouse writes :—The molluscan fauna in and around Shirley Pool is not a large one. I have only taken two land and fifteen freshwater species. Perhaps *L. glabra* Müll., *Aplecta hypnorum* L., and *Segmentina nitida* Müll being the best captures, the latter was regarded by the late Dr. H. H. Corbett as the greatest one.

The late T. W. Saunders paid great attention to dead shells found on Sutton Common; he had a good series taken from this locality. The method he used was to take a bagful of soil home and wash a little at a time, the shells floating to the top of the water, then sorting them. He used to call

¹ In *The Naturalist* for 1906, p. 372, this species is noted as 'not having hitherto been put on record for the British Isles.' Morley writes (*Ich. Britt.*, II, 67) 'I first met with it at Moulton in Suffolk [hence the specific name] on June 17th, 1899,' i.e. seven years before the Askern record.

them sub-fossil, but I believe this term has been disagreed with by some geologists. His work showed that at some fairly recent date there were many more molluscs found in this area than at present.

LICHENS.—Mr. W. E. L. Wattam writes :—The area of investigation will yield an interesting lichen flora. Attention might be paid as to the effects upon this class of plants by reason of the deleterious fumes arising from the increased colliery development. Among the species which should be noted are *Collema pulposum* Ach., *Peltigera canina* Willd., *Parmelia physodes* Ach., *P. saxatilis* Ach., *P. sulcata* Tayl., *P. fuliginosa* Nyl., *Cetraria glaucum* Ach., *Evernia prunastri* Ach., *E. furfuracea* Mann., *Lecanora subfusca* Ach., *L. campestris* B. de L., *L. muralis* Ach., *L. Hageni* Ach., *L. atra* Ach., *L. galactina* Ach., *L. parella* Ach., *Xanthoria parietina* Th.Fr., *Pertusaria pertusa* D.T. & S., *Cladonia pyxidata* Hoffm., *C. fimbriata* Fr., *C. gracilis* Willd., *Lecidia confluens* Ach., *L. contigua* Fr., *Verrucaria nigrescens* Pers., and *V. muralis* Ach.

TEA AND MEETING.—As the accommodation is somewhat limited it will be well if members return to the Thatched Cottage at convenient times, and a General Meeting for presentation of reports on the work done and for the election of new members will be held there at 6-30 p.m.

The next meeting of the Union will be at Hedon, V.C. 61, on July 16th, 1938.

YORKSHIRE NATURALISTS' UNION.

For particulars apply to

The Hon. Secretary, Austwick, via Lancaster; or to the Hon. Treasurer, S. D. Persy Fisher, Sackville Street, Leeds.

.....19

.....[Signature and Titles.]

.....

.....[Address.]

wishes to become a member of the Yorkshire Naturalists' Union, and will subscribe FIFTEEN SHILLINGS (15/-) per annum until the end of the year in which written resignation is given.

Members are entitled to receive 'The Naturalist' and all other current publication of the Union, free.

..... } [Signature
of Proposer
and
Seconder.]
.....

Yorkshire Naturalists' Union.

President :

H. HAMSHAW THOMAS, M.B.E., F.R.S., M.A., Sc.D., F.G.S., Cambridge

Hon. Secretary :

CHRIS. A. CHEETHAM, F.R.E.S., Austwick, *via* Lancaster.

Hon. Treasurer :

S. D. PERSY FISHER, Sackville Street, Leeds.

Divisional Secretary :

C. W. MASON, 15 Park Avenue, Hull.

The 412th Meeting

WILL BE HELD AT

HEDON

for the investigation of the Saltmarshes and of the
Hull Joint Dock Wastes

On Saturday, JULY 16th, 1938

HEADQUARTERS.—The Queen's Head Hotel, Hedon. Proprietor :
Mr. P. S. Hanby. Tel. 41056. Terms : Bed and Breakfast, 6/6.

TRAVEL ARRANGEMENTS.—Convenient trains to Hull leave
York 7-55 a.m., Leeds 8-30 a.m., Scarborough 8-25 a.m., and Grimsby
8-12 a.m.

Bus times.—Leave Hull 9-45 a.m., 10 a.m., 10-15 a.m. Return to
Hull 6 p.m., 6-13 p.m., 6-30 p.m., 6-43 p.m. and 7-13 p.m.

Trains leave Hull for Hedon at 10-10 a.m. and 12-10 p.m., and return
at 6-18 p.m. and 7-14 p.m.

Trains leave Hull for York 7-30 p.m., Leeds 8-5 p.m., Scarborough
6-5 p.m., and Grimsby 7 p.m. and 8-45 p.m.

EXCURSIONS.—Parties will leave Headquarters at 11 a.m.

(1) Under the guidance of T. Stainforth, B.A., B.Sc., and A. K. Wilson for Salt End salt-marsh, which is the last remaining salting in the City of Hull; here many interesting salt marsh plants will be found. From here this party proceeds to the Hull Joint Dock wastes where many of the alien plants in the Hull district, for which this excursion has specially been chosen, have been found; this party returns to Hedon for 5 p.m.

(2) Under the guidance of Mr. C. F. Procter for Cherry Cob Sands, to investigate the salt marshes there; here also many salt marsh plants will be found, but the bird life of the Humber district will be seen here at its best.

Hedon itself is an interesting old town, and at one time was more important than Hull, and still has many reminders of its past importance. For these accounts consult :—Boyle's *History of Hedon*, Parks' *History of Hedon*. Other books of reference :—*Flora of the East Riding*, by J. F. Robinson; *The Adventive Flora of the East Riding of Yorkshire*, by A. K. Wilson; *Birds of the Humber District*, by J. Cordeaux.

MAP.—Hull Sheet of 1 inch Ord., No. 33.

GEOLOGY.—Mr. W. S. Bisat writes :—The chief geological interest in the Hedon district attaches to the gravel deposits at Burstwick (Kelsey Hill) and Paull. These have been described by several writers including, C. Reid in the *Geological Survey Memoir on Holderness*, Sheppard in *Geological Rambles in East Yorkshire*, and Sheppard and Stather in *Proc. Yorks. Geol. Soc.* for 1907. Lists of mammalian remains are given by Sheppard (p. 216), and of mollusca by Sheppard and Stather (p. 175). The most important shell is *Corbicula fluminalis* generally regarded as a warm or temperate estuarine form. The large mammalian and marine fauna is (with the exception of the Mammoth and *Tellina ballica*) not found in the boulder clays of the coast, except that shells have been found in patches in the Bridlington Crag and at Dimlington, and it seems certain that the mammalian remains were swept into this locality from the west, whilst the marine fauna must have been living not far away.

VERTEBRATES.—Mr. C. F. Procter writes :—The district being estuarine is at its richest in bird life during the winter when numbers of immigrant wild fowl or birds moving south stay over if the conditions are to their liking. Large numbers of Mallard, Widgeon and Teal stay over, lesser numbers of Shelduck, Shoveller, Pintail, Pochard and an occasional Smew, Goosander, Merganser may be seen. Pinkfoot, Brent, Bean and White-fronted geese may be met with and practically all the waders. Curlew occur in vast numbers; Whimbrel, Godwit, Greenshank, Redshank, Knot, Dunlin, Turnstones, Fullsnipe, Jacksnipe and Woodcock are all regular winter visitors; the Heron is always with us. The Greater Blackback, Lesser Blackback, Blackheaded and Herring Gull and Kittiwake are fairly common. The Shag and Cormorant are occasional visitors. Long-eared, Short-eared, Barn, Tawny and Little Owl occur. I have sometimes seen over twenty Short-eared Owls in the air at once. Sparrowhawk, Kestrel, Magpie and all the Corvidæ are common. In spite of all this wealth of winter bird-life, the summer is not much better than the average secluded countryside. Shelducks will be seen, and their nests are in the rabbit holes. Mallard are nesting fairly frequently and like all the waders may be seen right through the summer consisting of immature or sterile birds that have no response to the calls of sex. The Lapwing nests sparingly and the Carrion Crow is everywhere. All the smaller birds and Finches are well represented, but the Cornbunting is perhaps the only bird that may be met with in numbers beyond the ordinary distribution. As for Mammals

there is a fair distribution of all the Yorkshire types. The Badger and the Otter are neither of them quite unknown, but only make their appearance at long intervals. The English Squirrel is about gone and the American has never introduced himself. All the Rodents are common and the Grass-snake can be seen at all times except when one is looking for them. The common Lizard occurs among the chalks towards Welwick corner and eastward up to Spurn.

COLEOPTERA.—Mr. T. Stainforth writes :—The district to be investigated has proved fairly rich in estuarine and aquatic beetles. *Haemonia curtisi* was found in abundance a few years ago in a pond on the King George Dock Estate but this has been filled in. *Plateumaris braccata* still occurs and should be sought for on *Phragmites* in the ditches. In ponds in the Hedon, Paull and Marfleet district *Dytiscus circumflexus* is well established and is captured every year. A Humber shore pond will sometimes yield *circumflexus*, *marginalis* and *punctulatus*. Very interesting, too, and having a similar distribution, is the Squeaker Beetle (*Hygrobia (Pelobius) tarda*), of which I have captured the strange larva in a pond near Hedon.

The salt-strays are good hunting grounds, species like *Bembidion lunatum* and *B. andreae* var. *bualei* occurring among the tidal rubbish, together with *Dichirotrichus pubescens*, *Bembidion concinnum*, etc., and small ‘staphs.’ *Pogonus chalceus* has been found in some numbers on the banks of Hedon Haven together with *Microlestes (Blechnus) maurus*. Characteristic water beetles in the pools are *Agabus conspersus*, *Celambus parallelogrammus* and *Helophorus mulsanti*. *Codiosoma spadix* and *Nacerdes melanura* are common about old piles and revetting. *Laemostenus complanatus* is common on the waste ground of the docks, and the imported timber has yielded many kinds of Longhorn beetles. Generally distributed are *Agonum marginatum*, *Bembidion minimum*, *Amara convexiuscula*, *A. aulica* and *Pterostichus macer (picimanus)*.

FLOWERING PLANTS.—Mr. T. Stainforth says :—The district between Hull and Hedon is interesting botanically because of its nighness to the Humber and the presence of brackish creeks. The best areas for halophiles are the banks of the outlet of Hedon Haven, to the east of Salt End Common (now covered by oil tanks), and between Salt End Common and the east end of the King George Dock. In both areas are salt-strays, not spoiled by grazing, which are submerged only by the higher spring tides.

Here will be found, some in flower or fruit, the estuarine form of the Scurvy Grass, Thrift, Sea Milkwort, Sea Plantain, Sea Spurrey, Sea Wormwood, Sea Aster, Sea Arrow Grass, and Salt-marsh Club Rush (*Scirpus maritimus*). There are small patches of Sea Lavender, Shrubby Sea Purslane (*Atriplex portulacoides*), and, at Hedon Haven, occasional plants of the Glasswort, the locally so-called ‘Samphire’ (*Salicornia herbacea*).

The following plants also occur in the neighbourhood to be visited :—*Trifolium fragiferum*, *Bupleurum rotundifolium*, *B. tenuissimum*, *Plantago Coronopus*, *Atriplex littoralis*, *A. Babingtonii*, *Ceratophyllum demersum*, *Juncus Gerardi*, *Potamogeton pectinatus*, *P. pusillus* var. *Friesii*, *Eriophorum angustifolium*, *Carex divisa*, *C. vulpina*, *C. distans*, *Glyceria maritima*, *Lepturus filiformis*, and *Hordeum marinum*.

In ditches and ponds near the Humber bank occur several forms of the ‘batrachian’ Ranunculi, including *heterophyllus*, *peltatus* and *Baudotii*.

Mr. A. K. Wilson adds :—KING GEORGE DOCK.—Much of the land around the King George Dock, constructed to the east end of the City, is reclaimed land formerly on the foreshore, which has been filled in and raised above tide level by the material excavated from the dock basin.

The rubbish from the dock quays, warehouses and railway trucks is dumped upon the area and naturally results in a prolific growth of exotic plants, all the cereals from rye to maize, and castor oil and sunflowers occurring. Sooner or later all these give way to a luxuriant and beautiful growth of the Fireweed (*Epilobium angustifolium*) with intermingling thistle and *Rumex* species. *Ranunculus arvensis*, *Delphinium Ajacis*, *Eschscholtzia Douglasii*, *Hesperus matronalis*, *Sisymbrium altissimum*, *S. orientale*, *Sinapis arvensis* var. *orientalis*, *Erucastrum Pollichii*, *Lepidium Draba*, *L. perfoliatum*, *L. densiflorum*, *Thlaspi arvense*, *Rapistrum rugosum*, *Saponaria Vaccaria*, *Silene noctiflora*, *S. gallica*, *S. dichotoma*, *Lychnis Githago*, *Medicago Falcata*, *M. denticulata*, *M. arabica*, *Melilotus alba*, *M. indica*, *Vicia villosa*, *Lathyrus tuberosus*, *L. aphaca*, *L. sativus*, *Potentilla norvegica*, *P. intermedia*, *Epilobium tetragonum*, *E. obscurum*, *E. roseum*, and several hybrids, *Oenothera biennis*, *Coriandrum sativum*, *Caucalis daucoides*, *C. latifolia*, *Xanthium Strumarium*, *X. spinosum*, *Tanacetum vulgare*, *Artemisia macrantha*, *Senecio squalidus*, *Carduus nutans* var. *macrocephalus*, *Cirsium arvense* vars. *mite* and *setosum*, *Marina lactea*, *Cichorium Intybus*, *Crepis Taraxacifolia*, *Lactuca Scariola*, *Phacelia ciliata*, *P. parviflora*, *Echinospermum Lappula*, *Amsinckia Lycopsoides*, *Solanum nigrum*, *Hyoscyamus niger*, *Verbascum Blattaria*, *Salvia verticillata*, *Chenopodium murale*, *C. hybridum*, *C. ficifolium*, *C. glaucum*, *Rumex dentatus*, *Ricinus communis*, *Cannabis sativa*, *Panicum miliaceum*, *Phalaris canariensis*, *P. paradoxa*, *Polypogon monspeliensis*, *Cynosurus echinatus* and *Hordeum jubatum*. A full list of plants recorded for the dock-wasteland can be found in the Hull Scientific and Field Naturalists' Club's *Occasional Papers*, No. 1, 'The Adventive Flora of the East Riding of Yorkshire, 1938.' A copy will be available.

HUMBER SHORE, SALTEND.—*Lepidium Draba*, *L. ruderales*, *Raphanus maritimus*, *Arenaria Peploides*, *Spergularia salina* var. *neglecta*, *Apium graveolens*, *Aster Tripolium* and var. *discoideus*, *Artemisia maritima*, *Armeria maritima*, *Glaux maritima*, *Plantago maritima*, *Atriplex littoralis* and var. *serrata*, *Suaeda maritima*, *Triglochin maritimum*, *Scripus maritimus*, *Glyceria distans*, *G. maritima*, *Festuca rubra* var. *arenaria*, *Lepturus filiformis*, and *Hordeum marinum*.

LICHENS.—Mr. W. E. L. Wattam writes:—I can trace no records for this part of the East Riding, but in all probability a good many of the species which I listed for Easington and Welwick during the visit of the Union to Spurn in 1928, will occur at Hedon, see *The Naturalist*, 1928, pp. 315-318. Amongst the species noted were *Parmelia perlata* Ach., *P. fuliginosa* Nyl., *Physcia hispida* Tuck., *Placodium flavescens* A. L. Sm., *P. ferrugineum* var. *festivum* A. L. Sm., *Lecanora campestris* B. de L., *L. calcarea* Sommerf., *Lecidia coarctata* Nyl., *Bilimbia aromatica* Jatta, and *Verrucaria muralis* Ach.

TEA AND MEETING.—At the Queen's Head Hotel. A tea with meat at 2/6 or plain at 1/6 will be ready at 5-15 p.m., and this will be followed by a General Meeting for presentation of reports on the work done during the day and for the election of new members. We shall be glad to send forms of application for membership to any one desirous of joining our Union.

The Next Meeting will be held at Sedbergh, July 30th to August 1st, 1938.

Yorkshire Naturalists' Union.

President :

H. HAMSHAW THOMAS, M.B.E., F.R.S., M.A., Sc.D., F.G.S., Cambridge.

Hon. Secretary :

CHRIS. A. CHEETHAM, F.R.E.S., Austwick, *via* Lancaster.

Hon. Treasurer :

S. D. PERSY FISHER, Sackville Street, Leeds.

Divisional Secretary :

J. HARTSHORN, Leyburn.

The 413th Meeting

WILL BE HELD AT

SEDBERGH

On Saturday, JULY 30th, to
Monday, AUGUST 1st, 1938

HEADQUARTERS.—The Bull Hotel, Sedbergh. Proprietor, Mr. J. H. Bland. Tel. No. 64. Terms : 12/6 per day for bed, breakfast, sandwiches, and dinner. As August Bank Holiday is a very busy time in all holiday resorts it is advisable to make early application, and as many rooms in the hotel have two beds, those prepared to share rooms are most likely to be accommodated with beds in the hotel.

TRAVEL ARRANGEMENTS.—Trains with connections from the West Riding, *via* Ingleton, arrive at Sedbergh 9-4 a.m., 12-48 p.m., 4-23 p.m., 7-22 p.m.

The return trains are at 8-9 a.m., 9-25 a.m., 2-24 p.m., 6-10 p.m.

There is no service on Sundays.

Bus may be had from Kirby Lonsdale.

MAPS.—Sheets 19 and 20 of the 1-inch large size Ordnance Survey are needed for the suggested excursions.

ROUTES.—The party will leave each day at 10 a.m.

Saturday.—Conveyances will be arranged to go to Needlehouse Ghyll and the upper part of the Rawthey. Dr. Edward Frankland has kindly given us permission to visit this area and he hopes to be with us on the excursion.

Sunday.—We shall make use of Mr. A. Wilson's suggestions.

Monday.—We proceed to the lower part of Garsdale and return *via* Fostrow Fell.

GEOLOGY.—Dr. H. C. Versey writes : Sedbergh lies near the well-known Dent Fault which separates the horizontally bedded Carboniferous rocks of the Rigid Block of N.W. Yorkshire from the folded Lower Palæozoic rocks of the Howgill Fells. The faulting was accompanied by considerable compression and the rocks near the fault are extensively wrinkled. This is well seen in many tributaries draining into the River Rawthey. Before the Carboniferous rocks were deposited intrusions of igneous material took place and include the Bluecaster diatase and numerous dykes of lamprophyre (mica-trap).

On the west side of the fault occurs a thick development of a red conglomerate which may possibly be of Devonian age.

In Needlehouse Ghyll the characteristic rhythmic succession of Yoredale rocks may be studied and seen in character to be midway between the facies seen in Wensleydale and that of the Ravenstonedale-Shap area.

In glacial times the Howgill Fells supported a local ice-cap and evidences of glaciation are abundant, most noteworthy of which is the fine cirque at Cautley Craggs. The formation of this feature disturbed the pre-glacial drainage, and a good instance of river-capture can be studied above the crags.

FLOWERING PLANTS.—Mr. A. Wilson writes : I have done little or nothing in the Sedbergh district since I wrote the notes for the last Y.N.U. Circular and can add nothing further of value.

I have been in Needlehouse Ghyll and think you would find the Yorkshire side worth exploring ; starting from the foot of the Ghyll and proceeding to the top, it contains limestone, shales, and grits. As an alternative to the much-visited Cautley Spout, I suggest going up Bland's Gill and ascend Fell Head by the western fork of Long Rigg Beck. The party might return by the Calf Beck or by Bram Rigg Beck. *Zygodon lapponicus* grows on damp rocks near the head of the first named and *Bryum Duvalii* in boggy ground near the latter on the right of the stream I think a little below where the branch stream comes in from Rowan tree grains.

The bank of the Lune is always worth visiting, and also that of the Rawthey, especially the wooded part below and about the little waterfall below Thrushgill Farm. Birds Nest orchis grows in the woods but will be out of flower.

The Circular to which Mr. Wilson refers is No. 368.

Plants which may be mentioned as of interest include the *Circæa alpina* L., which Dr. Sledge suggests is really *Circæa intermedia*. In *The Naturalist* for July Dr. Bedford cites a locality near Needlehouse Ghyll (below Uldale House) where some interesting areas of *Climacium dendroides* occur. A little further up the Rawthey stream is the only place where *Anæctangium compactum* is found fruiting in Yorkshire.

LICHENS.—Mr. W. E. L. Wattam writes : The district is rich in this class of plants, amongst the species recorded being *Collema cheileum* Ach., *Peltigera aphthosa* Ach., *Cetraria islandica* Ach. and var. *tenuifolia* Wain., *Gyrophora polyphylla* Hook., *Lecidia immersa* Ach., and *Dermatocarpon aquaticum* Zahlbr. Useful reference can be made to the records of Mr. Albert Wilson, F.L.S., F.R.Met.Soc.; in Y.N.U. Circulars 336 and 568, and *The Naturalist*, 1922, p. 398, and 1924, pp. 49-50. Also my own records in *The Naturalist* for 1932, pp. 343-344.

ENTOMOLOGY.—COLEOPTERA—Dr. W. J. Fordham says : The following beetles have been taken in the neighbourhood of Sedbergh.

<i>Cychrus rostratus.</i>	<i>Cychramus fungicola.</i>
<i>Carabus arvensis.</i>	<i>Helmis maugei.</i>
<i>Amara acuminata.</i>	<i>Parnus prolifericornis.</i>
<i>Bembidion atrocoeruleum.</i>	<i>Aphodius constans.</i>
<i>Pterostichus adstrictus.</i>	<i>A. lapponum.</i>
<i>Hydroporus rivalis.</i>	<i>A. putridus.</i>
<i>H. melanarius.</i>	<i>Serica brunnea.</i>
<i>H. morio.</i>	<i>Meloe proscarabæus.</i>
<i>Staphylinus stercorarius.</i>	<i>Apion onopordi.</i>
<i>Dianous cærulescens.</i>	<i>Ceuthorrhynchus ericæ.</i>

MEETING.—Tea at the Bull Hotel at 6 p.m. Plain 1/6, with meat or ham and eggs 2/6. This will be followed by a General Meeting for presentation of reports on the work done and for the election of new members.

The next meeting is the Fungus Foray at Hovingham, September 2nd-7th, 1938.

YORKSHIRE NATURALISTS' UNION.

For particulars apply to

*The Hon. Secretary, Chris. A. Cheetham, Austwick via Lancaster ;
or to The Hon. Treasurer, S. D. Persy Fisher, Sackville Street, Leeds.*

This form, when filled up and signed, should be sent to the Hon. Secretary of the Union, accompanied by the amount of the first year's subscription.

The Subscription of 15/- entitles the members to receive the Union's monthly magazine, "The Naturalist," as well as the "Transactions."

Persons related to and resident in the family of a member are admitted as 5/- members, to enable them to attend excursions, but not to receive the publications.

Qualification for Life Membership :—A Donation of 11 Guineas.

Yorkshire Naturalists' Union.

.....19.....

[Signature and Titles.]

[Address.]

wishes to become a member of the Yorkshire Naturalists' Union, and will subscribe
FIFTEEN SHILLINGS (15/-) per annum until the end of the year in which written
resignation is given.

[Signature of
Proposer
and
Seconder.]

Elected.....19 at.....

Chairman's Signature.

Yorkshire Naturalists' Union.

President :

H. HAMSHAW THOMAS, M.B.E., F.R.S., M.A., Sc.D., F.G.S., Cambridge.

Hon. Secretary :

CHRIS. A. CHEETHAM, F.R.E.S., Austwick, *via* Lancaster.

Hon. Treasurer :

S. D. PERSY FISHER, Sackville Street, Leeds.

The 414th Meeting

OF THE

YORKSHIRE NATURALISTS' UNION

WILL BE THE

FUNGUS FORAY

AT

HOVINGHAM

From SEPTEMBER 2nd to
SEPTEMBER 7th, 1938

Chairman of the Mycological Committee : W. G. BRAMLEY

Convenor of the Mycological Committee : G. SHEARD

TRAIN SERVICES.—The best way to get to Hovingham is by train to Malton and then by West Yorkshire bus. These leave Malton (Market Place) at the following times :—

FRIDAY.—7-5 a.m., 9-50 a.m., 12-5 p.m., 3-5 p.m., 4-45 p.m., 6-45 p.m., 9-35 p.m.

SATURDAY.—7-5 a.m., 9-30 a.m., 11-5 a.m., 12-5 p.m., 12-30 p.m., 1-5 p.m., then hourly till 9-5 p.m.

The journey takes 23 minutes and the fare is 9d. single, 1/3 return.

THE DISTRICT.—The country is well wooded and pleasantly diversified, the substratum being mainly chalk. There are many fine trees in the woods and a fine Yew edge near the Hall, the district being most promising for the mycologist.

HEADQUARTERS.—Mr. Bernhard Boothroyd, Worsley Arms Hotel, Hovingham, York. Terms: bed, breakfast, sandwiches, and dinner, 12/6 per day, no extras. It will be advisable to make early application as the accommodation is limited.

REFERENCES.—Sheet 22 1-in. Ordnance Survey covers the district. J. G. Baker's *North Yorkshire*, the *Victoria County History*, and the Y.N.U. Circular No. 392 are useful for reference, and in *The Naturalist*, 1935, p. 258, there are mycological notes from the Hovingham district.

PERMISSION.—Permission to visit the Hovingham Woods and Estate has been granted by Sir Wm. Worsley, Hovingham.

MEETINGS.—The Annual Meeting of the Mycological Committee will be held at the Worsley Arms on Saturday, September 3rd, at 8 p.m., when Mr. W. G. Bramley will deliver his address from the Chair on 'Myxomycetes.' Mr. T. Petch has also promised two papers, one on 'Xylaria,' and the other on 'Pure Cultures—Recent Developments.'

The next meeting will be the Annual Meeting of the Union at Hull, December 3rd, 1938.

YORKSHIRE NATURALISTS' UNION.

For particulars apply to

The Hon. Secretary, Austwick, via Lancaster; or to the Hon. Treasurer, S. D. Persy Fisher, Sackville Street, Leeds.

.....19.....

.....[Signature and Titles.]

.....[Address.]

wishes to become a member of the Yorkshire Naturalists' Union, and will subscribe FIFTEEN SHILLINGS (15/-) per annum until the end of the year in which written resignation is given.

Members are entitled to receive 'The Naturalist' and all other current publication of the Union, free.

..... } [Signature
of Proposer
and
Seconder.]
..... }

Yorkshire Naturalists' Union.

President :

H. HAMSHAW THOMAS, M.B.E., F.R.S., M.A., Sc.D., F.G.S., Cambridge.

Hon. Secretary :

CHRIS. A. CHEETHAM, F.R.E.S., Austwick, *via* Lancaster.

Hon. Treasurer :

S. D. PERSY FISHER, Sackville Street, Leeds.

Vice-Presidents :

PROF. SIR A. C. SEWARD, M.A., F.R.S., Cambridge.

ALFRED HARKER, M.A., F.R.S., Cambridge.

THOMAS SHEPPARD, M.Sc., F.G.S., F.S.A.Scot., A.L.S., Hull.

RILEY FORTUNE, F.Z.S., Harrogate.

PROF. W. GARSTANG, M.A., D.Sc., F.Z.S., Oxford.

H. B. BOOTH, F.Z.S., M.B.O.U., Ben Rhydding.

T. W. WOODHEAD, Ph.D., M.Sc., F.L.S., Huddersfield.

SIR A. SMITH WOODWARD, LL.D., F.R.S., F.L.S., F.G.S., London.

PERCY H. GRIMSHAW, F.R.S.E., F.R.E.S., Edinburgh.

PROF. J. H. PRIESTLEY, D.S.O., B.Sc., F.L.S., Leeds.

EDWIN HAWKESWORTH, Cross Gates, Leeds.

WM. FALCONER, F.R.E.S., Liverpool.

PROF. F. O. BOWER, D.Sc., F.R.S., F.L.S., Ripon.

HERBERT E. WROOT, Bridlington.

T. PETCH, B.A., B.Sc., North Wootton, King's Lynn.

PROF. A. GILLIGAN, D.Sc., F.G.S., M.I.M.E., Leeds.

J. MEIKLE BROWN, B.Sc., F.R.E.S., Sheffield.

W. S. BISAT, M.Sc., F.G.S., North Ferriby, East Yorks.

E. G. BAYFORD, F.R.E.S., Barnsley.

W. H. PEARSALL, D.Sc., F.L.S., Sheffield.

The 415th Meeting and 77th Annual Meeting

WILL BE HELD AT

HULL

On Saturday, December 3rd, 1938

The Annual Meeting of the Union will be held at Hull by the invitation of the Hull Scientific and Field Naturalists' Club and of the Hull Geological Society. The meetings will be held in the Royal Institution and Museum, Albion Street, Hull.

At the Albion Street Museum some special exhibits likely to interest the members have been arranged. These include a large

case of the more valuable and important geological specimens formerly in the Mortimer Museum at Driffield, recently taken out of store, including new species of ammonites, some new species of gasteropods which were protected from being dissolved by a large flat ammonite under which they were found, and some exceptionally large fossil oysters known as *Inocerami*, the largest of which measures 18 in.

The zoologists will be interested in the following birds, some of exceptional interest, which have just been presented to the Natural History Museum by Mr. S. H. Waterhouse, of Sutton. Their chief value is in the fact that they were obtained in East Yorkshire, viz.: Glossy Ibis (Burton Constable); Ruff (Humber); Whimbrel, Purple Sandpiper (Humber); four Water Rail (Cottingham); Peregrine (Flamborough); two Greater Spotted Woodpecker (Sutton); Green Woodpecker (Sutton); Stint, Common Sandpiper, Ringed Plover (Humber); three Little Auks (Filey); two Hawfinch (Sutton); Greenshank, two Curlew Sandpiper (Humber); Little Owl (Sutton); two Waxwing (Sutton); four Dotterel (Muston); two Little Grebe (Sutton); Leach's Petrel, Sanderling (Humber).

There is also a very fine Peregrine, a Marten, and a Wild Cat recently obtained from the collection of the late T. Audas.

There will be an exhibition of some new records of Alien Plants found in the district, by Mr. A. K. Wilson.

TRAVEL FACILITIES.—The last trains leave for :

Leeds at 8-5 p.m.

Selby at 8-5 p.m. and 8-40 p.m.

York at 7-30 p.m.

PROGRAMME

2-0 p.m. **Sectional and Committee Meetings.**

2-30 p.m. **Executive Meeting.**

3-0 p.m. **General Committee Meeting.**

Tea Interval.

5-45 p.m. **Reception** by the Chairman of the Hull Museum's Committee, Ald. R. W. Wheeldon, at the Royal Institution.

6-0 p.m. **Annual Meeting and Presidential Address** on 'The Quest for Primitive Flowers in the Jurassic Rocks of Yorkshire.' The address will be illustrated with lantern slides.

7-0 p.m. **Conversazione.**

Will members of the **Executive** and of the **General Committee** take note of the above times as no further notice of these meetings will be sent out.

Issued bi-monthly, Illustrated with Plates and Text Figures.
To Subscribers, 12s. 6d. post free.

The Scottish Naturalist

With which is incorporated 'THE ANNALS OF SCOTTISH NATURAL HISTORY'

EDITED BY

A. C. STEPHEN, D.Sc., F.R.S.E.

Keeper, Natural History Department, Royal Scottish Museum.

AND

PERCY H. GRIMSHAW, I.S.O., F.R.S.E., F.R.E.S.

Formerly Keeper, Natural History Department, Royal Scottish Museum.

Assisted by:—Professor JAMES RITCHIE, M.A., D.Sc., F.R.S.E.; EVELYN V. BAXTER, F.Z.S., H.M.B.O.U.; LEONORA J. RINTOUL, F.Z.S., H.M.B.O.U.; H. S. GLADSTONE, M.A., F.R.S.E., F.Z.S.; C. H. O'DONOGHUE, D.Sc., F.R.S.E.; ANDERSON FERGUSSON, F.R.E.S.; A. R. WATERSTON, B.Sc.

Subscriptions should be addressed to the Publishers,
Messrs. OLIVER & BOYD, LTD., Tweeddale Court, Edinburgh.

The Entomologist's Monthly Magazine

PRICE TWO SHILLINGS MONTHLY.

EDITED BY

K. G. BLAIR, B.Sc., F.R.E.S.

R. W. LLOYD, F.R.E.S.

H. G. CHAMPION, M.A., F.R.E.S.

F. LAING, M.A., B.Sc., F.R.E.S.

J. E. COLLIN, F.R.E.S.

H. SCOTT, M.A., Sc.D., F.L.S.

J. J. WALKER, M.A., R.N., F.L.S.

This Magazine, commenced in 1864, contains Standard Articles and Notes on all subjects connected with Entomology, and especially on the Insects of the British Isles.

Subscription—15/- per annum, post free, to—

**NATHANIEL LLOYD & CO., LTD., BURRELL STREET,
LONDON, S.E.1.**

Irish Naturalists' Journal

A Magazine of Natural History, Antiquities and Ethnology.

Published every Quarter by the I.N.J. Committee.

EDITED BY J. A. S. STENDALL, M.R.I.A., M.B.O.U.,
with the assistance of Sectional Editors.

Annual Subscription, 6/- post free.

Single Parts, 1/6.

All communications to be addressed to—

W. M. Crawford, B.A., F.R.E.S., F.Z.S., Hon. Sec.,
Orissa, Marlborough Park, Belfast.

PRINTING

Inquiries Invited

Estimates Free



A. BROWN & SONS, LTD.

PERTH STREET WEST, HULL

Telephone No. 16119

Telegrams : "Brown, Hull"

COLLECTING APPARATUS.

Nets
Entomological Apparatus
Larva-Cages
Vivaria

Vacula
Plant-Presses, etc.
Pond-Nets
Collecting Tubes

Aquaria
Geologist's Apparatus
Dissecting Instrument
Microscopes, etc.

All requisities for indoor or outdoor work in every branch of Natural History.

FLATTERS & GARNETT, LTD.

309 OXFORD ROAD, MANCHESTER.

BINDING "THE NATURALIST"

Volumes of THE NATURALIST for any year can be bound in a serviceable and attractive Cloth Case, dark blue and Gilt lettered on back and side. Price

4/6 per volume, or post free 5/-.

A. BROWN & SONS, LIMITED
PERTH STREET WEST, HULL

REVUE DE GÉOLOGIE

et des Sciences Connexes.

Review of Geology and
the connected Sciences.

Rundschau für Geologie
und verwandte Wissenschaften

Rassegna di Geologia
e delle Scienze affini.

Sponsored by the SOCIÉTÉ GÉOLOGIQUE DE BELGIQUE, with the coöperation of the FONDATION UNIVERSITAIRE DE BELGIQUE.

A monthly publication giving abstracts, clear but concise and not controversial, of original paper appearing in many widely distributed publications. Abstracts prepared by well-trained collaborators. Essential to the student reader and the investigator, enabling him to keep closely in touch with the progress and discoveries made over the whole world. Included are not only those in Geology proper but also in the related sciences thus covering 18 Departments. In this work scientific institutions, geological surveys and many individuals coöperate, thus establishing close relations between the geologists of the whole world.

Secrétariat Général: Institut de Géologie, Université de Liège (Belgique).

Annual subscription price:

35 Belgas, sent to Mr. G. TIBAU, 35 rue des Armuriers, LIÈGE, BELGIUM,
also through a bookseller.

NORTH WESTERN NATURALIST

A SCIENTIFIC AND EDUCATIONAL JOURNAL (Published Quarterly), especially for Cheshire, Cumberland, Derbyshire, Isle of Man, Lancashire, North Wales, Shropshire, Staffordshire and Westmorland.

EDITED BY A. A. DALLMAN, A.L.S., F.C.S., in collaboration with

H. BRITTON, F.R.E.S.
F. J. BROWN, M.Sc.
Rev. G. H. CARPENTER, D.Sc.
W. E. COLLINGE, D.Sc., F.S.A.
R. H. CORSTORPHINE, B.Sc., F.L.S.
R. J. FLINTOFF, F.L.S., F.Z.S., F.C.S.
H. E. FORREST, F.L.S.

J. W. JACKSON, D.Sc., F.G.S.
T. A. JONES.
H. W. MILES, M.Sc., Ph.D.
C. L. WALTON, M.Sc., Ph.D.
F. E. WEISS, D.Sc., F.R.S., LL.D.
A. WILSON, F.L.S., F.R.Met.S.

Communications to:—

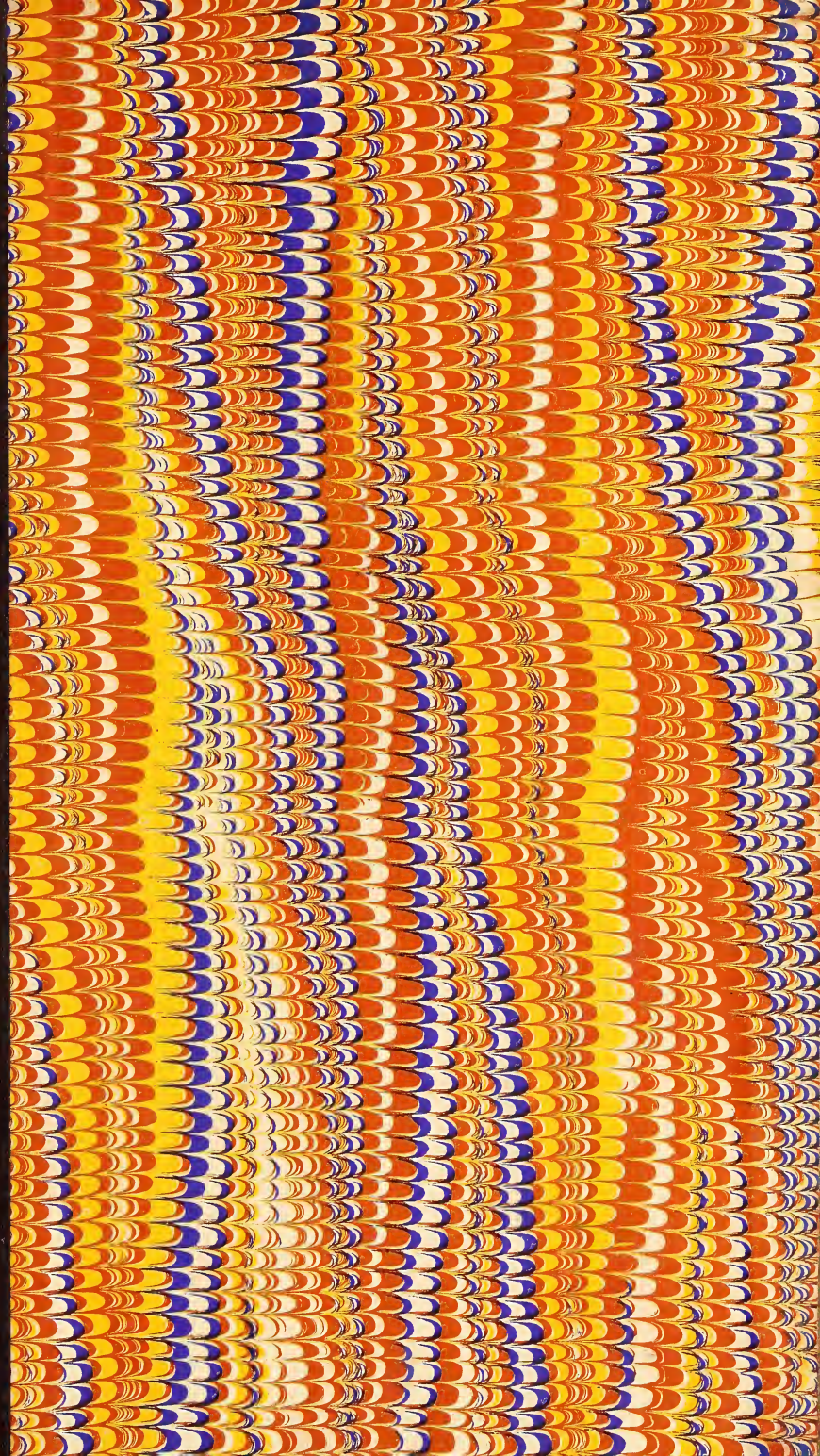
Editorial—A. A. Dallman, A.L.S., F.C.S., 12 Tickhill Road, Doncaster.

Business—T. Buncle & Co., Ltd., Market Place, Arbroath.

Annual Subscription, 7/6. Single copies, 2/- net.

Printed by A. BROWN & SONS, LTD., Perth Street West, Hull, and published by A. BROWN & SONS, LTD., at 5 Farringdon Avenue, in the City of London.
December, 1938.





SMITHSONIAN INSTITUTION LIBRARIES



3 9088 01206 3319